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ART. I.—THE SOUTH AND HER REMEDIES.

As a public journalist, with all the responsibilities of the position, we have never hesitated, on every proper occasion, to aver openly and boldly our opinions upon the great questions which are now shaking the pillars of the Federal Union. We believe that the position of the South is one of extreme peril—that taking counsel from her *distractions*, her opponents have been gathering strength, and will soon be *irresistible*; that no sense of "returning justice" has yet been exhibited by them; that no olive branch of peace has been tendered, which may with safety be accepted; and no earnest afforded at all satisfactory of future repose and equal rights under the Constitution.

Notwithstanding these are our views, there are others, we know, who think differently, and among them some of our most valued friends, whose patriotism and eminent characters place them above all suspicion. We cannot denounce, but must respect their differences of opinion, and accord to them a faithful hearing.

In such a spirit we publish the annexed paper. It is the voice, without doubt, of a respectable minority of the Southern people, and has an undeniable right to be heard through the pages of a magazine like ours, which belongs to no state nor party, but professes to be the organ of the *entire South*. In the same spirit we shall publish an answer, if it be furnished to us, from any competent source. Heaven send the South moderation, yet firmness and decision!—respect for the constituted authorities, yet regard for her own peerless *honor, rights and liberties*, in this fearful crisis!—[EDITOR.]

For years past it has been evident, that the greatest danger to the continuance of the Republic lay in the different views taken by the Northern and the Southern states, of the institution of domestic slavery. Since the question was first mooted, upon the admission of the State of Missouri, the elements of sectional strife have existed; for a time, apparently inactive, or nearly so, but for the last fifteen years, day

by day gathering strength; and during the last five or six years with alarming rapidity. The Southern states, during this time, have seemed not to be aware of the true state of things. They have slumbered, undisturbed, as if unconcerned, at the threatening mutterings of the storm. They have acted as if they did not observe the advancing public opinions of the North, and of the world, upon the subject, of all others the most vital to them. It is idle to deny that reprobation of their institutions is felt in foreign countries equally as strong as in some parts of our own. Our domestic policy is condemned in Europe, in terms as violent as those used by the Abolitionists of the North. We still think we can afford to laugh at the notions of the former, though at times, indignation at wanton insults is deeply excited. So we have thought we could disregard, and practically have disregarded, the evidences presented, of the deep hostility planted in the Northern breast against us, and our systems of policy.

It is true, that all have not slumbered so soundly—some from time to time have sounded the alarm; but how have they been heeded? The pages of our leading periodicals furnish proof, that the position of the South has been pondered upon; that its duty in relation to the inferior race of men in its midst, has been considered; that its duty in relation to the acquisition of territory, which has thrown the apple of discord in the midst of the country, has been sought after; the history of the great social revolutions in Europe has been explored, to aid our people and our legislators, by lessons drawn from the experience of the past; but where is the evidence that the alarms, which from time to time have been sounded, have sunk into the public mind? What system of legislation has been adopted, with a statesman-like forethought of the difficulties and duties of our position? Instead of boldly looking our situation in the face, and aided with all the lights in the power of history and calm reflection to furnish us, acting with the consideration that becomes our position, but too often mere haughty denunciations have been cast upon the heads of our maligners, and exasperating threats of resistance to their unwarrantable aggressions have been passed by our state authorities.

Time was when, by a wise consideration of our domestic concerns, the real objections to our systems could have been, to a great extent, obviated, and the feelings of those worthy of attention conciliated towards us; not that the right to dictate to us, or to interfere with our affairs, is to the slightest degree admitted. The exclusive control of the subject is a matter about which there is no room for dispute. We must maintain it, at all and every hazard. The first attempt to interfere, or even to advise, must be promptly resisted; the responsibility is upon us alone, the supreme and exclusive control must rest with us.

Very different from the admission of such a right to interfere, is the adoption by our own authority of a scheme of policy, the effect of which would be, to disarm objections; although such scheme may have had its origin in a knowledge of the existence of these objections, and its end may have been to disarm them. No institution devised or regulated by man is perfect; the defects of each are more

likely to be discovered by its enemies than its friends; and wisdom is not above taking counsel, even of an enemy. If, in matters of political concern, an error can be removed, or an advantage obtained, duty requires of the authority that controls, that that error be removed, and that advantage be secured. As individuals, and as societies, men are so connected, that they must govern themselves by principles not altogether at variance with the common sense of mankind. The common judgment of men, or the public opinion of the society with which we are brought in contact, as individuals, is a power that no man can wholly disregard. So the public opinion of the world in national affairs, is a power that sooner or later will be heard; and true statesmanship consists, not in wantonly disregarding its behests, nor in blindly following them, but in consulting its views, and so acting as to avoid a shock to its sense of right, till it can be enlightened or modified. It is in the recognition of this truth that political wisdom consists; and it is in following the counsels it suggests, that convulsions are escaped, and political security obtained.

It may not agree with our pride of independence thus to act, and probably will not accord with the feeling of the times, to divert the attention of our people to this truth; but it will certainly tend to our advantage to heed the lessons of experience, however unpalatable they may be.

No one can doubt, but at this time the public mind of the South is greatly excited, in view of the feeling displayed by the people of the Northern states on the subject of slavery. This excitement has, as it were, been brought to a head, by the discussions that have occurred in Congress upon the admission of California to the Union, and the formation of governments over the territories recently acquired from Mexico. It has now reached such a point as to render calm consideration of our position, and our duties, nearly out of the question. With many, the time for an examination of these things has passed; they have no thought for any thing but resistance; the measure, mode, or means of resistance is not even thought of, while the consequences, whether advantageous or the contrary, have scarcely received the slightest reflection. In the midst of an excitement so far advanced, it is not now proposed to discuss the course of conduct the South owes it to herself, and to her position in the eyes of the world, to adopt, in relation to her domestic institutions. Perhaps a sound policy would dictate, at this present time, that nothing in that way should be done or even said, lest it give countenance to the assumed right of other people to interfere in our affairs. Perhaps an obstinate silence on this subject is now the course of prudence. Let the North attend to its business, and we will attend to ours, is the reply we are certainly disposed to make, to the superfluous charity they exhibit towards us.

At present, the point to which the Southern mind is looking, is, how shall we act in the now state of things, and in view of the actual legislation already had upon the subject of controversy?

A series of laws have been passed by the National Legislature, embracing all the questions at issue between the two great sections

of the country. Opinions are divided upon the propriety of these laws, as a system avowedly proposed to settle the differences pending. Some, at the South, think the effort is a denial to her of her rights, a granting of the whole dispute to the North, and that in their passage Congress has been recreant in its duty to the Southern states. Others do not discover such violation of duty as would justify resistance. Probably, however, a vast majority of the people of the Southern states see, in the present aspect of affairs, serious cause of anxiety for the future, and feel that it is incumbent on the people of the South to do something to arrest aggressions, and if need be, put themselves in a position to repel them. Unfortunately we cannot all think alike on the means to be employed. Unhappily, some have allowed themselves to be stung too deeply by the reproaches and insults of the North, and violent and ultra modes of redress are openly proclaimed.

It is greatly to be feared that over-much haste is shown. We, in common with many, believe that true patriotism does not yet require the agitation of the severance of the political bonds of the country, much less their actual destruction; that great uncertainty attends the movements now sought to be made, and undeniably a great want of unanimity. If a majority adopt these violent means of redress, a proscriptive policy towards a large minority must result. Oppression and injustice will be committed by their countrymen, toward Southern men, far exceeding the injustice complained of being committed by the North. The dicta of a majority are not necessarily the decisions of a correct reason, and do not of themselves rightfully challenge obedience at the hands of a minority. No tyranny is so oppressive as that of a majority in a so-called free people—none is so easily and so readily exerted; none for which redress is harder to be found. The absence of personal responsibility, in such cases, removes the firmest barrier that has or can be erected in favor of civil liberty, and to which the most despotic monarch must pay deference. A majority, in a community such as ours, may become the most oppressive of tyrants, amenable to none, injurious alike to the minority and the country it oppresses. Symptoms of this proscriptive spirit are even now beginning to show themselves. Witness the resolutions passed by many "Southern Rights Meetings:" the possession of power by such men would be the signal for the total overthrow of a free spirit of inquiry. Liberty of conscience in political concerns would be abolished. All who differ in opinion from the majority—from those who seek the so-called security of their country, would be denounced as enemies of the South. All that prefer a continuance of the union of the states, would be stigmatized as traitors to the honor of the state. Words, sacred to patriotism, will be called into free use by the dominant majority. The minds of many will be thereby inflamed, their judgment clouded, their feelings excited: no name will be too base to be applied to an opponent that cannot think with them. It may be, no violence will be deemed unjustifiable towards those thus denounced enemies of their country.

A similar spirit, but less vindictive, would, doubtless, arise on the

part of the other side, if, after an excited struggle, power should remain with them. It would be less violent, because their policy is founded on more moderate doctrines than are announced by their opponents. Their success, too, would not result in the destruction or reorganization of the present institutions of society. Society would not by them be thrown from its regular pathway—the political machine would remain in its accustomed foundation. Its operations, doubtless, would become more vehement than usual, but not so vehement as to end in its own destruction.

In Republican governments, a majority must of necessity, for the sake of order, rule; no other test can be practically applied to decide what shall be the rule of conduct, than the number of persons that forces the adoption of the rule; if that number be a majority, generally it may be considered safe to regard the opinion correct. In ordinary times the opinion is sufficiently correct to be acted on without much misgiving. Yet there are many cases where we know the judgment of the majority is fundamentally wrong. In such cases the minority abide by that judgment, because the continued good order and regularity of society is of far more importance to them, and to the nation, than is the establishment of the correct rule in that particular case. On this basis avowedly rests the authority of all the American governments. This principle, in fact, lies at the foundation of all governments. In many it is not indeed acknowledged; in many it is dimly seen; in some again, it is seen, but the military power of the sovereign so far exceeds the strength of the subject, that practically the government is nearly independent of the governed. Though the government, even in that case, is largely influenced by the public opinion of that and the surrounding countries, it is so administered that open conflict with that opinion is, as far as possible, avoided. A direct conflict between a government the most despotic and powerful, with an unanimous deeply-seated public opinion of the nation, would end in the overthrow of the former, no matter how well organized and powerful.

Republican forms of government openly acknowledge this principle, and base their organization upon the will of the majority. Yet even in these governments there have been provided some security against the dangers of an unjust operation of the rule.

The rule, it should be observed, obtains only in the first instance, when the organic law is to be established. After the form of Government is established, the power to act, to carry on the details of legislative, judicial and executive authority, is vested in fewer and fewer hands, till the veto power is left to the sound discretion of only a single mind, aided by such lights as his knowledge and experience can command.

The object of these limitations is to secure the community against the wild acts of a mere multitude, and procure the result, as far as possible, of deliberate judgment upon the measures that are proposed to be enacted.

We have ordained, for our still greater security, written Constitutions, that are supposed to represent the decisions of the matured

judgment of the whole people in matters competent for that authority to decide, and to acknowledge the existence of those rights that are inherent in man, and beyond the authority of all earthly powers. No one doubts there exist such rights. Liberty of conscience in religious matters is one; freedom of opinion on all matters, whether of secular or religious concern, is another of these rights; and they remain, of right, undisturbed, unless they lead the holder to overt acts injurious to society: then the good order of society is felt to be of more value than is the individual right of the offending individual. For the protection of these individual and collective rights, courts of justice are organized; they are meant to secure justice, a universal right to all, against the power of a majority.

Government has been said to be of divine right, and so it is; but no particular form of government, whether monarchical or republican, can for itself claim this right as belonging to itself alone. Society has the right to select its political form of government; and it enacts laws and administers justice, by a right inherent in it. Its right to select a mode of government is under no limitation from any source; it may exercise that power, guided alone by the lights of its own reason. But this right is given to it only that it may perform a duty. Its duty is to see that the rights of each individual member are protected and enforced. If society disregards this duty, and wantonly force on the individual the observance of rules, simply because it so wills, or because the majority so will, it violates its duty, it becomes a tyranny, its right to the exercise of power is gone, and the obedience of the subject becomes a matter of expediency for him alone to decide: and in proportion as the number of men increases, whose rights are disregarded, or (in questions of policy merely) whose wishes and feelings are wantonly disregarded, the expediency of resistance increases, and revolution against the established government may ensue; or in case the majority are for resistance to an already established government, the right of the minority to continue the government will lead to a struggle, more or less violent, between the factions.

When society has once established a form of government for its well-being, a certain order of things grows up under it, and a shock to the fabric of government penetrates, and is felt in every part of the edifice; the whole frame of society is more or less convulsed. The continued preservation of that government becomes a duty upon all its subjects, till it is found that longer submission would be an evil greater than could result from its overthrow; and the hope of benefit from the change becomes almost a certainty. No evil can result from any government worse than a state of anarchy; and if anarchy must ensue upon its overthrow only, duty requires the evil government should be borne with. If benefit is certain, duty requires the change. If it be doubtful, duty requires submission, with efforts to remove the evil. If opinions of the result is divided among the citizens, duty requires that neither extreme of opinion be followed, but that a medium be followed, in which the largest possible number may unite, till circumstances arise that change the division of opinion into unanimity, or nearly so. When that exists, we can hope that

the path of real duty is found, and it may be followed cheerfully and confidently. "In multitude of counsellors there is safety," says the wise man.

These reflections furnish a rule for the guidance of the people in the present state of things at the South.

Doubtless the peculiar feelings of the South have been wantonly outraged—doubtless a settled spirit of hostility has, in more than one way, been evinced by citizens of the North; and there are there many men who are wiling to disregard the guaranties of the Constitution in favor of the slave-holding states, and proceed directly to the enactment of laws, for which no warrant can be found. They have already denied obedience to a portion of the duties enjoined upon them, and would rejoice at a change of the Constitution such as would sanction a direct interference in our internal and domestic affairs. They have even set up a higher law for their direction and guidance than the fundamental law of the land—the will of all the people; and thus wickedly attempt to absolve their conscience from obedience to a law they have sworn to protect and defend. These facts present matters for serious consideration, and if the Southern people could be satisfied that the people of the North all felt alike in these respects, it would become the South at once to take bold steps to secure themselves against the threatened aggressions. A knowledge of the existence of these things in the free states, justifies them in preparing to take those steps. Thus far, probably, all men at the South can willingly go.

But here the division begins. Many hope, and are willing to believe, that these things can truly be averred of comparatively a small portion of the Northern people. Others think and assert, that the whole body is infected, and justice cannot be expected at their hands—that they will proceed from their present course to a still worse, and cease only with our entire destruction. These aver that the Constitution has already been broken, and our rights trampled upon. Those do not so regard the acts complained of, but on the contrary, assert they can see in them no violation of the Constitution; that though some parts of the recent legislation of Congress are highly objectionable to their notions of propriety, they were still within the power of Congress to enact, and form parts of a system, which was adopted avowedly to conciliate the honest prejudices of the two great sections of the country, and as such should be acknowledged.

The former are for immediate secession; for throwing off all connection with those they deem their oppressors, take their rights in their own hands, and defend, if need be, their new position, at the point of the sword. The latter think the forms of the Constitution are yet sufficient to their defence; that acts of oppression have not yet been committed that would justify extreme measures, and still look fondly to the union of all the states, as the common protector of all.

Whichever of these parties may be right, they are both, in the main, beyond doubt, honest in the expression of their opinions; both patriotic; and each deems the course it recommends the one proper to be pursued.

These parties nevertheless exist, and they are each preparing to enlist as many of the people as they can in their favor. Words of patriotism, glowing imaginations, and high-wrought declamation, will not be wanting to either, and each will have some foundation for its assertions. The scene depicted may still be true, though the scene itself changes with the changing position of the observer.

The existence of these parties not only show a want of unanimity among our people, but that very division of sentiment indicates the course that will eventually be pursued by the people themselves. Entire unanimity of belief, where room has been left for inquiry, argues, and in general may be said to establish, the truth of that belief. For no institution ever yet generally existed among mankind, that did not have some portion of truth at its foundation; and in proportion to the degree of unanimity an opinion receives, so is the probability of its correctness, where means of investigation have been afforded. Where conflicts of opinion have occurred, the result has been, events have finally settled in a course between the two, and it will incline to the one side or the other, according to the relative numerical strength and force of those supporting the opinions respectively. Like an object acted upon by two mechanical forces, it pursues a line marked by the two jointly. These remarks are particularly applicable to questions of political concern, where the rule of conduct is prescribed according to the number of voices, and they find examples in the histories of all revolutions. The result is, in fact, a compromise of opinions; though when the passions of men are aroused, violent conflicts, great oppressions, and dire calamities often intervene between the beginning and the end. Success may apparently cheer each side: it is but temporary; the conflict was necessary to satisfy men that neither could wholly prevail. Calamities were necessary to teach them the folly of resorting to brute force to establish political opinions.

History is said to be philosophy teaching by example. Cannot men now learn the philosophy from the example, without furnishing another example from their own history? Cannot we of the South now avoid the dangers, that would certainly ensue, were we to continue divided? Some of these evils have already been mentioned—the evils of oppression and injustice committed upon our own citizens—of proscription for political sentiments—disregard of the duties of justice and charity—evils that may be wofully increased, if acts of violence be committed; leading to civil war at home, and the intervention of neighboring powers in our domestic quarrels.

Cannot we of the South take measures to find what is the path of conduct that the common sense of the whole country would point to, as the one the wants of the case demanded should be pursued? Once found, there is little difficulty or danger in following it. The united, peaceful course of a great people, moving firmly to the attainment of a great national object, would carry with it a degree of moral force, far exceeding in influence and effect all that could be expected from a tumultuous outbreak of the passions. Its existence would be the certain evidence of the success that must attend it.

ART. II.—ON THE DISADVANTAGES OF WATER.

The poet Willis, in his admirable play of "Tortesa the Usurer," makes one of his characters anathematize "water," because, ever since the world was drowned by the deluge, it had tasted of sinners. And in real life we have heard of the New-Hampshire farmer, who being appealed to by a temperance orator to bear witness to the virtues of water, replied very gravely, that it was a very good thing for soiled linen, but when there arose a question of steady drink, he voted for *rum!* Certain it is, that too much water, like too much turkey at Christmas time, has its practical disadvantages.

Charles Lamb's well known witticism, that Hydropathy was worthy of attention from its antiquity—it having been in use during Noah's time—was but an intensified horror of too much water. Its blessings are great, but its disadvantages are not to be lightly summed up; and hereon we drop our inkstand by way of a clincher.

Ask the mummies now carried away from the shadow of their country,—pyramids into the recesses of village and city museums,—whether the Nile they worshipped so gratefully was not sometimes in their mortal knowledge a decided nuisance; whether rheumatisms and chills and fevers did not sometimes interfere with their mortal appetite for rice? Ask of the returned Arctic voyager on shore, whether he does not wish to make one of a party to view the Falls of Montmorenci in mid-winter? Ask the captain of a Canton packet to purchase a panorama of the Atlantic Ocean? Summon to your library the shade of Sidney Smith, and inquire of him whether or no Mrs. Partington, who combated the Atlantic with a broom, was not the widow of an ex-keeper of the Eddystone light-house? My word for it (the rain coming down in torrents as I write, and a painting of a shipwreck staring me in the face from over the mantel-piece opposite) the mummy, the voyagers, and the shade of the humorist, would shake their heads ominously at the water pitcher by the reader's elbow, and mutter, "all is not gold that glitters."

We may laugh at the sayings of the dramatists, and of the rum-drinker before quoted; but who shall positively deny that the first was wrong, or the latter illiberal? I never could find that Adam, and Cain, and Abel drank water, or worshiped it as the greatest blessing upon earth. Cain set out to paddle his own family canoe, it is true, but what ancient geographer points out the lake of his retributive travel? Was there any water before the flood? Did not the deriders of Noah mock his ark because they could not understand its use? The spies praised a land flowing with milk and honey, not with water and bull-frogs!

Water has been deified too long. The Dagon must topple from its shrine, because the Philistines of utilitarianism have raised up an higher, in the substances of India-rubber and gutta-percha: topple from its shrine of universal practicability, I mean the most. And as children on the sea-cliff, readers may have a fling at it.

Water boils one's potatoes, it is true; but your true cook roasts

and fries them, or forms into *croquettes*. (A thousand blessings, *en passant*, to the Yankee who invented the steaming of vegetables as a means of cooking them.) Water gives us a speed of fifty miles the hour on rail-roads, when a pow-wow of pine sticks smoke their pipes beneath it; but how many grave-stones rise into the air over scalded remains! Water floats your ships and damages your dry goods. Water draws your cup of Bohea, but it weakens your milk. It drives us to the expense of pilot-coats, the buying of umbrellas "for another's use," the disfiguring ankles with India-rubber over-shoes, and makes us seek refuge in Kellinger's liniment and Mrs. Jervis' cold candy.

My good friend Robert Nosey was one of the kind who never could find *any* disadvantage in water. He had been born in a room, the east window of which looked out upon a mill-dam; and at the tender age of five he had been out "spearing" killy-fish in the neighboring brook, with his grandmother's largest knitting needle. When he grew up into man's estate he was as fond of water as ever, and daily took his sponge-bath. One New Year's Day (we were boarding together as bachelors, and his sleeping apartment was over mine) a friend presented him with a portable shower-bath, of an improved kind, just patented. I saw it when "on its winding way" up to his dormitory, and it looked as much like the barrel of a gigantic telescope covered with muslin as any thing. A height of twelve feet; a shape round as a solid circle; a basin at the top, which would hold three or four gallons of fluid; a pump at the side to force these gallons upwards; a string to precipitate the water downwards when pulled; and muslin curtains lined with oil-skin inside, behind which one might retire in modest security, like a Circassian beauty in a harem tent.

Of course, the very morning succeeding the day of the present, the thing has to be tried; the mid-winter luxury of a shower-bath, under the auspices of a new patent, to be indulged in! Nosey could talk of little else at supper, than his new shower-bath; "he was sure he never would have cold feet now, nor rheumatism; he would soon take an affectionate farewell of pilot cloth, and be as inured to the changes of weather as an Osage savage," etc., etc.; and loud and hearty were the congratulations from all his fellow boarders, including a Mrs. Griffin, whose axioms of health had relation to the taking of blue pills, (centennial preservers, as she termed them,) and held all other remedies for the keeping of sound health in perfect contempt. But *she* could not resist such a shower-bath,—a new patent!

The next morning I was awakened about daylight by a tremendous bump on the floor (echoed through the ceiling) of the room above me—of a bump as if the floor yet above that had come down on a sparring match with its neighbor, and was giving it to him right and left, in hearty good earnest, with an armful of rafters to spare. I listened, and heard a stifled shriek, followed by another bump.

Grasping a pair of drawers, and "legging" into them as I went along in search of humanity in distress—to bound up stairs and enter Nosey's room, was but the work of an instant; and opening the

door, what a spectacle was presented! All I remember at first was, rushing to a trunk hard by, and rolling over its brass nails in an agony of laughter.

On the floor by the window lay my water-loving friend; his head and shoulders peeping from out the muslin curtains of his overset shower-bath, like the peak and jagged sides of a mountain above a thin veil of mist. Drops of water were coming from his hair; his gaze was rueful in the extreme; and the floor was a miniature Bay of Biscay, with strong symptoms, in one corner, of a patent boot-jack swimming off in fine style.

"Really, Fred, this is unkind," cried Bob to me, "making sport of misery—stop your laughing and help me up."

I begged his pardon, and extricated him from his Marius-like situation among the ruins, (I'm sure he looked as forlorn as the exiled Roman does in the Art Union plate!)

He scrambled between the sheets of his bed, and shivering all over, pointed to the bath.

I raised it.

"Deuce take the horrid thing!" he commenced; "and this is my reward for laying awake nearly all night, waiting for the day-light to come, and thinking of the luxury awaiting me. Up I got a quarter-hour since;—John had just knocked at the door with his two pails of water, (on my soul I believe the rascal had been icing them.) In shorter time than I tell of it I pumped the water into the basin; got inside; adjusted the curtains tightly; and—rash man that I was—pulled the string with a jerk." Here he shivered all over, like a captive prince is supposed to shake in ballads and choice poetry, when the fetters are being placed upon him; and then continued, "Down came the water upon me like a torrent from Caucasus; it was as if I had been struck with an iceberg, and, like a gallant ship, was going to pieces! Without looking well for the opening in the curtains, I made a spring in my desperation—springing against the curtains, and oversetting the deuced machine, while I fell with it."

I was again on the trunk, rolling with laughter, and my friend swearing again at my unfeeling habit. Of course, at breakfast time, everybody (although ignorant of Bob's mishap) was inquiring about the bath.

"I shall have to send it away," answered its owner, very dryly; "the patent is a failure, *for it leaks.*" It was fortunate that a piece of omelet stuck in my throat at this juncture and stifled my laughter, or the *joke* might have leaked out as well as the water.

From this it may be supposed, that my friend Nosey took an everlasting disgust to water in general, and shower-baths in particular. But he could not surrender the former, although he openly denounced the latter. It became a theory with him that cold bathing was highly prejudicial to the bodily economy of man. He now swore by *warm* baths—vapor baths—sulphur baths, &c. &c.

The mercantile houses we were connected with sent us one spring to England on commercial business. We went by packet—Bob Nosey and I; and the fourth day out, my water-loving friend caught

a severe cold while trolling over the poop with a bit of salt pork, in hopes to catch a shark. The cold was a kind of fish he did not like, and he bethought him of his great remedy, the vapor-bath. But this, in a vessel at sea, seemed as impossible of attainment as shooting marbles on a treadmill. However, "Bob" was never disconcerted at trifles. Here was he going about the cabin, wheezing and coughing like a fat dog; a vapor-bath would cure him, and a vapor-bath he would have! We all laughed at him; but he begged us to suspend judgment, and went out for deliberation, and was seen in a few minutes deep in consultation with the cook.

Keeping within "social hall," as the narrow passage-way from the deck to the cabin was called, we had a good look out upon his operations. He had rolled out an empty water-cask, and was cutting out a hole in the "head" of it. Presently he jumped into the cask and commenced disrobing; tossing his clothes out upon the forecastle hatchway. Forward came the cook; while some of the sailors, idling in the vicinity, looked on in strange amazement, as our friend looked upon them in turn, with gaze expressive of interested satisfaction. The cook was heading his body in, *sans* the head, as if he were a Chinese malefactor about to undergo the tub punishment. It was clear now that the hole in the head was to keep his neck in place, and keep down the vapor from his mouth and nose.

But how was that to get in?

Next came the cook, bringing one of the immense tenkettles of the ship!

Selecting a small cask, (it was evident he was acting implicitly under instructions the while,) the cook sat the kettle upon it, and proceeded to insert the nozzle of the spout well through the bung-hole of the cask. The water was boiling hot, and the moment the steam touched "Bob" in a tender place, there arose over the still ocean a cry, which must have startled the Nautilus in its frail boat miles and miles away!

The man at the wheel was in a position to well observe the whole thing; and what wonder if his attention was so distracted from his duty, that he suffered the ship for a moment to come broadside to the sea. It was just the instant that the steam was scalding our poor friend; and a mountain wave from the sea-trough plunged over the bows of the ship like another Niagara—lifting up the cask with poor Bob Nosey in it, as if it were a mere bottle of which his head was the stopper.

And over the bulwarks went cask, Bob and all. The look when the steam touched him—the look in the old time when happened his shower-bath mishap, were nothing to that now seen—and seen, meteor-like, for an instant on his countenance, as he disappeared over the side.

"'Bout ship!" vociferated the mate, who had been eying the manœuvre, thus disastrously terminated by the negligence of the helmsman.

And "'bout ship" it was, as a dozen men, at a look from the captain, who rushed out, followed by all of us, sprang to the boats.

Looking out from the quarter-deck, we saw the cask plunging and bobbing about in the waves. Fortunately the sea was not very high, and the water running into the bung-hole weighted the lower end of the cask, and enabled Bob to keep in a perpendicular position. Under other circumstances, it would have been a ludicrous sight!

The boat's crew soon came up to him; unheaded him; dragged him out, and brought him on board more dead than alive.

Ever afterwards he eschewed vapor-baths, as he had tabooed and anathematized shower-baths. But not the steaming nor the briny dip he had in his marine cask, &c., could cure him of his love for water. By and by he got the idea that his liver was affected, and was persuaded to enter an hydropathic hospital, where he was ducked and played the *douce* with, and rolled up in wet sheets and flannel counterpanes, and pounded and bent, until it became a matter of doubt whether he was to be left with any liver at all—let alone an inflamed one!

I have not heard from him this many a day. He is said to have traveled to the Spas at Baden-Baden; to have translated Sir Edward Bulwer Lytton's tract on the Water Cure into very readable Russian; and is more than suspected to be the author of a Life of Preissnitz, that has been published anonymously.

But wherever he is, and if chancing to meet this little essay, should call all these mishaps to mind, I conjure him to fill a glass, as I do, at parting with the reader, in the most fruity of "Dudley Bean's" port wine, to the "DISADVANTAGES OF WATER."

ART. III.—SUPPOSITITIOUS REVIEWS.

TIERRA DE GUERRA.—NO. III.

IT is no part of the design of these papers to follow our Anglo-Spanish author through the sometimes dull details of his book; but before quoting the passages we have penciled, it would be as well to show what sort of a prison he was literally caged in for the time, with (subsequent) permission to go sight-seeing under the ciceronage of a very unprepossessing native.

"The room was quite empty, but at the farther end appeared another door, on pushing which I discovered my prison, whether by design or not, was less contracted than I had supposed. A few stone steps led to a terrace, below which appeared another, neglected in culture, but absolutely loaded with flowers, from the gorgeous scarlet blossoms of several species of cactus, to the faint blue balls of the mimosa. The terraces, enclosed by strong network, had formed an aviary on a grand scale; there were traces of walks among the dwarfed trees, and tracing one of these to its termination, through the open screen, a broad square or court was visible, with the great teocalli close at hand. The setting sun shone full on the front and side, and I saw distinctly the lineaments of the hideous idol seated in a crouching

posture, the mouth open and tongue lolling out, and on the summit a small structure like a dwarfish temple. During the night I frequently heard the sound of a horn, and a voice repeat a few unknown words in the direction of this temple; and the sonorous call falling from aloft through the stillness of the dark hours, enhanced the solemnity attaching to the large deserted building in which I was immured: these criers were the teopixqui (priests) who announced the passing time, from sunset to sunrise."

And again—"A strong wall formed one side of the cage, and the three others were enclosed by the copper net, which I found, on approaching, to be not as I had at first supposed of mere wire, but stout rods three or four inches apart. None but large birds could have been confined here, and this conjecture was confirmed by a gauze-like screen, visible at the opposite extremity of the palace; the intermediate space was occupied by a wilderness of tropical flowering and fruit-bearing plants; the mildness of the climate in this region, owing to its sheltered position and nearness to the equator, inducing successive vegetation, so that ripe fruits and young blossoms repeatedly load a single branch. On the third side the view was contracted by a thick grove of wide-spreading trees, and the fourth commanded the broad area in front of the teocalli; in the full light of day this last exhibited numerous details, which had escaped my attention the preceding afternoon. The base of the structure was little more than one hundred yards distant, the intervening court appearing unevenly divided by parallel walls scarcely hip high, extending from the foot of the first slope to the belt of trees forming a boundary on two sides; the teocalli itself resembled a steep pyramid, composed not of series of steps, but of six terraces, of smaller diameter and greater altitude as they approached the summit, stuccoed white externally, and diversified by two rows of hieroglyphics painted on the front, and a shallow trench, which ran from the feet of the idol to the plain, descending from steep to steep in a straight line. This idol was of enormous bulk, and could hardly have been chiselled from a single block, for although squatting on its hams on the fourth platform from the bottom, its head was nearly on a level with the next above, a height of perhaps forty feet; the face of the image was a hideous imitation of the human countenance, the eyes protruding, jaws half opened, and the limbs painted of a tawny green. Immediately above the monster's head, on the terrace, was a large altar, between the surface of which and the mouth of the former, a communication existed; and still higher, crowning the whole, appeared the fane or porch, whence issued the sound of horns at night. On gazing intently, I fancied I discerned a light flame at times in the last mentioned structure, which was open only towards the south, the teocalli facing the cardinal points, and this, as I subsequently learnt, was the sacred fire kept continually burning.

Not a living creature appeared during the morning, except a priest or two on the summit of the pyramid, who must have ascended by steps in the rear; and a few birds in the neighboring garden, some of whom occasionally descended to the stranger's cage, flitted from branch to branch, and then out into the free space again, with an ease tantalizing

to a prisoner; among them were several varieties of brilliant humming-birds, so tame that they scarce attempted to avoid my hand while hovering over a honey-flower. I caught them frequently, and held them like a jewel between the finger and thumb, while examining their delicate plumage, and restored them to liberty again, when they would seek the nearest cluster of blossoms, not at all disturbed by their brief bondage.

The cicerone before referred to, was called Atloe; and for reasons which afterwards appeared, inveigled our author into a sort of sight-seeing rather trying to Saxon nerves. The festival of the serpent woman is horrible enough to give one the nightmare.

"*Schoupal*, the girl," cried Atloe, entering abruptly some days after, with a face of savage exultation.

"The *Schoupal*?" said I, interrogatively.

"Yes, yes, the little fool that let them go on the other side of the Sierra. But the chief of her village has given her up to pacify his powerful neighbors, who had taken her accordingly to sacrifice to *Quitaztli*, the serpent woman, and that very night the festival would be kept."

I was shocked and distressed at this intelligence; the poor girl's liveliness and friendly disposition had at the first made a favorable impression, which resulted in hearty gratitude, when, unsolicited, she had rescued us from certain death; and now, for the first time, I bitterly regretted an expedition commenced at the cost of innocent blood.

"Ahti—you can go," Atloe said, eyeing me keenly. "It is a sight worth seeing." And our author did go; but we prefer to omit his prosy reasons for becoming a spectator, as well as the frightful details he gives of the revels themselves. Once afterward he was forcibly a witness to a somewhat similar orgie, and that alone should suffice to gratify all lovers of the strange and horrible. But before this, an attempt at escape is so full of adventure, we cannot slight the passage in immediate connection as it stands, with his subsequent lot. For all dry descriptions of customs, costumes, and the like, we refer the reader here, as elsewhere, to the book itself. Our object is to draw merely a few readable papers from the unknown pamphlet.

"One afternoon, Atloe received some intelligence which seemed to disconcert him, and coming to me, said, 'that the Teocacixi was expected in a few hours, and I must at once return to my quarters, as it was necessary to have the inner door plastered over before he entered the palace. I solicited, without success, to be allowed my usual freedom until the pageant was over, but my *otahl* only replied doggedly in the negative, adding, that it was not possible to say when smiths could be sent to set up the new door in the wires, and I must consequently go in before the old was irremediably closed. The whole bearing of the man had been moody of late, and it seemed to me he only attended my steps from some evil motive, to form an opinion from the suppressed malice I more than once detected in his look and voice. As there was no help for it, I reluctantly returned with

him, and found masons already waiting at my door to begin their work, which they did as quickly as I entered. For some days past I had been conducted in and out by a small door at the nearer end of the corridor, instead of, as formerly, down half the length of the latter, and through the grand portal in front; but the hasty glance I was enabled to cast upwards in crossing, showed that colored mats had been spread over a great portion of the stone floor, and that benches and low tables of carved wood, inlaid with gold, upon which were golden vases containing flowering plants, were scattered over the length of the promenade. I was now curious to see what changes had been made in the gardens and grounds adjoining two sides of my cage, and endeavored to force up a corner of the screen; but the matting was of such strength that I failed even to make a hole large enough to apply the eye to, unassisted as I was by any implement. At length, at the approach of evening, two men, carrying between them a small metal gate, appeared on the outer side of the bars, and fell to work with their implements to cut a sufficient opening; they worked hard, but in utter silence, and paid no attention to the few questions I could ask in their tongue. Such an opportunity might not occur again, and I was sorely tempted to saunter near, choose my time, and by well planted and unlooked for blows, overthrow the workmen, and so escape through the gap; but the appearance of *teopixquis* on the summit of the teocalli, and the daylight still remaining, checked my rising inclination rather than the mere want of weapons of any kind, not excepting even a billet of wood. I was restless nevertheless in spite of my desire to avoid all suspicion, and from a little distance watched keenly every action, praying that the work might be protracted until after night, in which case I resolved, at every hazard, to make one bold attempt.

Meantime, a stir was discernible among the *teopixquis*, and numerous drums, beaten on the teocalli, were immediately answered by the rattling of others, joined to a jingling of bells, and droning of some manner of wind instruments from the front of the palace. These sounds, and the distant shouts, heralded, as I supposed, the approach of the king; a surmise confirmed soon after by the descent of a long procession of the *teopixquis* bearing torches, from their elevation, and advancing towards the latter point. The smiths worked harder than ever, but in a few minutes it became so dark that one of them was compelled to hasten away for a light—the gate now only wanting hinges to render it complete, being first leaned up against the opening, and the swarthy naked back of the remaining laborer braced against it to prevent its falling; the entire carelessness of the position showed, that by them certainly no suspicion was entertained of my desire to be at large, an opinion not to be wondered at, since they may have seen me daily passing into the houses of their superiors, without the least show of restraint; and possibly the sturdy owner of the back added to this a contemptuous opinion of the amount of muscle contained in my slender figure, contrasted with his own brawny limbs. However that might have been, I longed for perfect liberty again, and could scarce control my impatience until the other was

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sufficiently far to prevent his ear being caught by the noise of the struggle. To have thrust the grating aside, and in a hand-to-hand encounter, endeavored to gain the mastery, would have evinced foolhardiness, to say the least of it, where the weapons, for as such most of their tools would very well have served, were wholly in the possession of the assailed party, and a shout could bring a throng to the spot; I consequently adopted a more vigorous method of accomplishing my purpose. Running rapidly but lightly for some yards, I threw my whole weight against the gate, at the moment that the smith had partly straightened himself up to look over his shoulder, his attention being caught by my quick footsteps; down he went headlong, the heavy grating above, and I on the upper surface of that; and although the shock must have been enough to stun an ox, on the instant he raised an outcry, which I stopped, before it had more than unclosed his lips, with a blow from an implement my hand fell upon, I scarce know how.

I rose to my feet somewhat shaken myself, and looked in the direction of the palace front, but nothing was discernible save a glare of torches over the intervening walls and trees, accompanied by a clamor, vocal and instrumental, sufficient to have drowned a shout from this distance, had the smith succeeded in giving one; the latter lay either dead or senseless, and without stopping to learn which, I walked as rapidly as the starlight would permit, overleaped the low boundary of the wooded grounds attached to the royal buildings, and crossed diagonally among the trees, the better to mislead the first of the pursuit. A square and street lay before, leading through the quarter of the *coamatlis;* but there was no help for it, as to avoid these a circuit of nearly half a mile not free from similar risk of encounters, was the only alternative; fortunately I still wore my usual native costume, and depending on the mantle and dim light to constitute my disguise, I moved along at a moderate pace, although my pulse was beating at fever heat with eagerness and excitement. I met several stragglers on their way to witness the arrival of the *Teocacixi*, and more than one called out to know if he had yet come; but although I understood their questions, I did not venture to utter a Tepecohuatlan word for fear of detection, and passed by, bending my face down as if lost in thought. One, the last I encountered, was however not so easily to be baffled, and after hailing me by some name, probably mistaking my figure for that of an acquaintance, made up to me, when I fairly took to my heels, the houses of the *coamatlis* being just then all passed, and heard my new friend letting fly from a distance a string of epithets for my exclusive benefit. There were no huts of the working classes on this side of the town, and almost immediately in the rear of the last habitation, I struck into a tract of land of the same rugged, sterile nature, as far as could be distinguished, as that we had crossed on the route to the *Tlamacazcalli.* The dwarfed growth was so dense in places, that I could not see an arm-length ahead, and this, with the rough character of the surface, rendered my progress exceedingly slow; but the ascent commenced abruptly, and inspired me with the hope that I was at the

foot of the low dividing sierra, and once the top was attained, would find no difficulty in descending to the great plain on the farther side. In this I discovered I was partly right, for after half an hour's tedious clambering, I found, to my dismay, a perpendicular wall of rock in front, and worse still, that I had been mounting in the bed of a chasm which here terminated, the steep sides approaching within reach on either hand. There was only one manner of remedying the mischance, by retracing my steps; and this I did until the chasm opened into a ravine, when I groped my way through a thicket, the thorns of which lacerated my hands and tore my native costume to shreds. I pushed on, however, commonly in a line parallel with the base of the range, as I judged that the surest method of finding a gap if any existed; and in case none was to be found, I determined, rather than turn back, to continue in the same course, even as far as the monastery itself. The latter place, I concluded, could be reached at least some time during the approaching day, and once in sight, I designed to lie concealed until the coming on of night suffered me to gain the road descried from the observatory, undetected, and so to find an easy descent to the plain.

As I alternately walked and climbed, my face was frequently turned towards the city below, over which hung a halo of light, and from the midst arose a hum of voices, interrupted by occasional shouts and bursts of wild music. That my flight had been discovered, and immediate measures taken to frustrate my plans, I afterwards learned, but at the time I could detect not the slightest indications of pursuit: everything around was quiet, and except the lizards, or small reptiles of some sort, which abounded and rustled through the leaves on all sides, whenever I forced my way into a thicket, and two or three hares startled from among the rocks, nothing possessing life crossed my path. As the night wore on, the fatigue consequent upon climbing a hill-side so rugged as that I was traversing in the dark, and after long inaction, began to be felt; and at last, bewildered by the numerous turns I had made, and uncertain of the right direction in which to advance, I sat down in a hollow within a group of jutting rocks to rest, but overcome by weariness, fell fast asleep, and so continued until dawn. As soon as I awoke, I began to look about me to discover my whereabouts, and reproached myself angrily for the rashness of the act; once recaptured, from what I had already, and under favorable circumstances, experienced, I could entertain little hope of again eluding the vigilance of my keepers. I was still more conscious of the folly of yielding to drowsiness, when between the crevices of my pile of stones I saw, not twenty yards off, several huts, such as the Tepecohuatlans who cultivate the lands inhabit; a sturdy class of the people, whom it would be a hopeless matter to endeavor to baffle on their own mountains. I had wandered, unaware, into the middle of one of their fields, the boulders among which I had taken refuge being quite surrounded by patches of maize and tobacco. As yet there was no sign of life about the premises, and supposing it not unlikely they too had visited the city the night before and returned late, I hastened to place myself again under cover, before my

retreat should be cut off by any awaking; accordingly, keeping my late shelter as much as possible in the line of the huts, I crept up the slope and soon breathed more freely out of immediate danger.

Not far from this place I fell into a foot-path leading through a defile, at the termination of which I hoped to find the passage I was in search of; the only thing to be dreaded was a chance meeting with any of the Tepecohuatlans, but I still held in my hand the tool which the evening before had done me good service, and with it I was resolved to attack any opposing odds, the name given me, "Quezatequitl," as already shown, acting as a more effectual safeguard of my life than a suit of armor. I had occasion to test both before walking the fourth of a mile farther, for in a place where the ravine narrowed and was overhung by crags, the noise of a pebble falling as if loosened from above by a stealthy foot, called my attention to the rear, and discovered a party of *Ichcahuepilli* (cuirassiers) who must have before occupied the heights, filling the passage.

As quickly as they saw they were detected, they started in full cry and run; but as I knew the summit could not be far distant, I had no fear of being overtaken with a start of at least seventy yards, and reinvigorated by my long slumbers; nevertheless, it was somewhat startling to hear an answering shout from the very quarter I aimed to reach: but there was no time for debating a choice of evils, and in another minute my advance was opposed by a second body of soldiers, while a rapid glance upwards showed the heights held by others swinging nets, which the swiftness of my pace alone deterred them from throwing with accuracy; indeed, as I ran, several dropped before and behind with a whizzing noise, and had I not been so far below, the second or third fling would have sooner terminated the race. Possessing, as I did, a sort of charmed person, I did not slacken my speed on account of those in front, but resolutely charged the whole throng, crying out meanwhile words which had been acquired piecemeal, carefully put together, and practised to employ in the event of an emergency like the present.

"*Queza-tequitl ine—Tonca! ac-miecachuey.*" (I belong to the Quezalé—beware, lest you harm me!)—paralyzed the arms of the Tepecohuatlans; but throwing themselves upon me as I penetrated their midst, they endeavored, by sheer force of numbers, to make me prisoner; but the idea of being borne back to witness another of their hateful sacrifices was intolerable, and I dealt blows right and left with certainly no weak arm. My weapon was in shape similar to a chisel, only that one edge was sharpened half way up from the square end, the material copper, tipped with flint, and from the weight produced hideous gashes in the visages upon which the keen extremity descended; except for the narrowness of sweep, I know of no preferable weapon in a desperate rencontre. Sometimes I was obliged to sever the sinews of a wrist before a determined grasp could be broken, but generally my hacks were directed against the bared breast and face. Slight as are these details of the most violent struggle it has ever been my ill fate to engage in, I fear there are not wanting persons who will judge as hastily as harshly of such apparent butchery, for

I confess not the slightest attempt was made on my life after the utterance of the talismanic words; but the horrors awaiting my recapture, the ultimate uncertainty of my fate, and the fact that it was owing to no native clemency that I received hurt from the hands of none of the ferocious sharers in the melee, must all be borne in mind, and I am confident any man of candor, placing himself in my position, will fully justify my deeds. Be that as it may, in far less time than the narrative consumes, I was through and free, and without a scratch; in another instant I turned an angle of the rock, and found myself on the summit, in sight of the broad valley and far glittering lake, and in contact with a parapet wall not higher than the breast, but upon which I had come so suddenly that there was no space to leap. I quickly recoiled a step, and had already risen from the ground in the act of vaulting over, when, slight as the pause was, a fatal moment of inaction being presented, a net dropped around my head like a cloud, and, blinded, entangled, yet carried forward by the impetus of the bound, I was dashed against the wall, and fell back on the inner side, more than half stunned.

My senses, however, were sufficiently alive to leave an indistinct resolution to be free, omnipotent, and I had already cut a rent in the meshes, when pounced upon by the excited pursuers, in whose hands, fast bound, bleeding from the mouth and fingers, which last had been cut by the chisel in the fall, and treated as roughly as the preservation of life would allow, I was borne back, and towards mid-day thrown into the former prison, the door leading into the aviary being closed also in the end, so as to limit me to the single apartment. To this I paid no regard at the time, for, faint and feverish from intolerable thirst and blood lost while returning, I laid stretched out upon the floor, and could think of nothing but my pains and bruises, and the mischance which had occasioned them all.

ART. IV.—MISSISSIPPI VALLEY.

REMARKS ON THE IMPROVEMENT OF THE RIVER MISSISSIPPI.

Bars or shoals are the result of some natural or incidental defect in the channel of a river; natural, as when caused by geological obstruction in its bed; incidental, as when caused by obstructions incidental in their locality, or when they are the legitimate result of causes that have grown out of the condition of the river itself. When natural, they could not have been prevented, because they existed always; when incidental, they might have been prevented, because, having originated in causes that grew out of the condition of the river, there was a time when they did not exist. In either case they can be removed.

Wherever shoals are formed, they can only be removed permanently, by removing the cause; for, if the shoal itself be removed, the cause still remaining, it commences reforming immediately; and

in a very short time, a shoal will be found occupying the same position as the one removed. If they are the result of any geological obstruction, that obstruction must be removed. If produced by any causes arising out of the condition of the river, the cause must be removed by altering that condition that gave rise to them.

The causes of the existence of shoals in the bed of a river, are the extension of the cross-section of the stream beyond its normal breadth, and for this reason we find also generally shoals where the current passes diagonally across the bed from one concave shore to another, or where the river is divided by a sand-bank or island. If the breadth of the current be increased, its depth must be diminished, in order to equalize the sectional area, which the river is able to keep open. In either of the above cases, as in all cases of shoals formed by incidental causes, the cause being removed, the river removes the effect, and relieves itself. The water of a river, if kept in a regular, uniform channel, of a normal breadth, will always keep it clear of shoals. To assert that the same volume and velocity that forced their way, and dug a channel for themselves from the mountains to the sea, (provided the one be not dissipated, the other diminished, and the action of both partially neutralized,) could not remove a few feet of sand that obstruct their channel, would be an absurdity, and a contradiction of the principles of Hydrodynamics.

A shoal in the channel of a river is sometimes merely temporary and accidental: the last flood produced it, and the next may sweep it away. Where, however, it continues permanently fixed, and subject to very little change from the action of high or low water, it is the result of some regularly and steadily-acting cause, or in some instances, to speak more correctly, it owes its existence to the diversion and dissipation of the power that could have removed it.

The bar at the mouth of the Mississippi is of this last character. It is an immense accumulation of mud and sand in the mouth of the river, 100 or 120 feet higher than the bottom of the river at New-Orleans. It has a depth of 12 feet of water on it, which has continued for years without any material change. This accumulation of sedimentary matter is the result of certain causes which, for as many years back as we have any information, must have combined to form it and keep it there. It is a remarkable fact, however, that, no matter how the river may swell with floods, or the gulf be agitated by storms, the average depth of water on the bar remains the same. This is a positive proof that there is a fixed cause, or combination of causes, which has produced it; and that, while the storms from the Gulf do not add to it, neither can the floods of the river remove it, in the present condition of its channel. It is a proof also, if any were wanted, that any temporary removal of that bar, by dredging operations, or otherwise, while those causes still remained to reform it, would be a mere waste of time, labor and money.

The bar owes its existence to the fact, that the scouring power of the river is nearly exhausted before it reaches the gulf, by the divisions of its volume into so many passes and innumerable bayous, while it is still further checked by the resistance offered to it by the

dead-water of the Gulf, and by its too great and unnecessary expansion near the mouth.

The volume of water in the river which by its weight and velocity at New-Orleans makes a channel of upwards of 130 feet deep, is drained of a portion of its power before it reaches the passes, where it is divided between the several channels that run towards the Gulf. Yet the quantity that enters the passes is still further divided by the bayous, or lateral outlets, which run off on either side, dissipating its strength, and almost entirely destroying the velocity and power of the current, until enough only is left to keep 12 feet of water on the bar. Were the same volume of water that at New-Orleans makes a channel of 130 feet deep, kept undivided until it reached the Gulf, so that its whole power might remain concentrated, the bar would be swept away far into the Gulf; to harmless distance. No bar could stand before the volume and velocity of the Mississippi river, if the first were not divided, the latter diminished, and the power of both broken before it reaches the Gulf.

The resistance of the dead-water of the Gulf is another agent in keeping the bar at the mouth of the Mississippi. This, when opposed to the divided volume, and almost exhausted velocity of the current, checks it still further, and causes a sufficient deposit of sedimentary matter to maintain the bar in its present condition, which, were it not for that resistance, even the present diminished volume and velocity of the water in the passes would partially wash away. The fact that the resistance of the water in the Gulf, passive or active, has not been sufficient to increase the bar, and entirely close up the mouth of any of the principal passes, shows clearly, that the water of the river that flows through the mouths of the passes, even with its divided volume and diminished velocity, still retains power enough to neutralize that resistance. The conclusion is therefore irresistible, that the power of the entire volume of water in the river, if kept united, and its velocity undiminished, would so far exceed that resistance, as not only to sweep away the bar, but to render its reformation impossible.

The expanse at the mouth is another agent in causing the bar. This expanse is due to the want of proper protection to the banks or sides of the channel, which are subject to the action of the upland waters, and the tides caused by the winds, whose successive abrasion waste the banks and enlarge the mouth.

The waters of the Gulf, when agitated by southerly winds, which propel them into the mouth of the pass, will force their way along the banks, where they meet with less resistance than in the mid-channel. This will produce the middle ground or sand-bank, and the two lateral channels, which are designated in the mouth of the South-West Pass by the pilots as the East and West Pass. Between these two lateral channels eddies are formed, which cause here, by the opposition of the two currents, the sand banks; while the dashing of the waves, agitated by the high winds, washes away the projecting edges of the low banks that extend into the Gulf. The expanse thus caused still further weakens the power of the current of

the river, by permitting the water to spread out too widely, decreasing its depth, checking its velocity, and increasing its tendency to deposit.

It must be observed that the shoal is situated within the mouth of the pass; that it is formed by the deposit of the sedimentary matter brought down by it, and that the only agency the water of the Gulf has in its formation is, the passive resistance with which it checks the velocity of the current of the river. Hence it is, that the water of the Gulf, even when driven into the river by southerly winds, produces no material change, if any at all, on the bar, and adds nothing to the accumulation of sedimentary matter that has contributed to form it. Whatever tendency to add to it the influx of the Gulf water, whether caused by tides or high winds, may have, is more than counterbalanced by the reflux which must necessarily follow.

This must be obvious to every one. When an elevation of the Gulf water takes place near the shore, either from the action of periodical tides or high winds, it necessarily forces its way into the mouth of the river. Having forced its way in and raised the surface of the water inside by the resistance which it offers to its passage out, and by the addition of its own volume, the tide turns and ebbs, or the winds subside, and the water forced into the river turns to seek its level in the Gulf. But as the Gulf water, acted upon by the tide or wind, has to meet in its passage up the river the force of the current, neither its velocity nor its power can be very great. When, however, it turns to seek its level in the Gulf, having no longer the resistance of the current of the river to contend against, the increased fall which its accumulation in the river gives it towards the Gulf, together with the additional impulse which the current of the river, now pressing it from behind, must give it, renders the velocity and power of the reflux, of course, much greater than that of the influx. The reflux, aided by the fall, and the volume of water, must certainly carry out more than the influx opposed by both can bring in.

The power of the current of the river is greater than the passive resistance of the Gulf water. This is evident, from the fact that it is able to maintain a depth of 12 feet over the bar. That the sedimentary matter, brought down by the river, is mostly, if not all, washed into the Gulf by the current, and carried away, is also evident from the fact, that the river is not adding to the bar. When the current of the river meets the water of the Gulf, it does not lose all its velocity at once. Its velocity is checked and somewhat diminished, but the current continues to force its way through, or rather over the dead water, partly from its original impulse, and partly from the pressure from behind, until at length the velocity, regularly diminishing as it progresses, ceases altogether, and the river water mingles with, and is lost in the vast expanse of the Gulf; while the immense mass of sedimentary matter that passes out over the bar, no longer supported by the velocity of the river, sinks in the deep water outside the bar, and becomes subject to the action of the Gulf currents, which soon removes it to other and more distant places.

Were the passive resistance of the water in the Gulf increased

until it became equal to the velocity of the river current, or the velocity of the river current diminished until it no longer exceeded the resistance of the Gulf water, the river current would, of course, be stopped at the mouth, and being no longer able to carry out into the Gulf the sedimentary matter it brought from above, that matter would be deposited there, and would increase the bar, until it rose to the surface of the water and completely shut up the river. If, on the other hand, the volume that now passes over the bar were enlarged, and the velocity increased until the power of the current was doubled, is it not evident that the inevitable result would be a decrease in the height of the bar, and an increase in the depth of the water over it? Close up the lateral outlets, confine the water of the river in its main channel, and contract the present expanse at the mouth, and a depth of twenty, thirty, or forty feet is just as possible and as practicable as the depth of twelve feet in the present condition of the channel.

To one familiar with the principles of Hydrodynamics, the removal of a shoal or bar in a river containing the volume of water that the Mississippi does, appears a matter so plain and palpable, that he can scarcely realize the fact that its practicability is doubted. The very fact, that the present defective condition of the channel of the river has caused that immense deposit of sedimentary matter, is a sufficient proof that, were it improved, the power that deposited it there could remove it. And, once removed, there is no danger that the Gulf will form one beyond where the present is situated. The water from the Gulf did not make the present bar, but, on the contrary, maintains a great depth of water immediately outside the mouth of the pass; and if the volume and velocity of the river current be increased sufficiently to remove the bar or deepen the water over it, there is no probability of a fresh one being formed; for, if the Gulf water cannot increase the present bar or form another outside of it, in the face of only twelve feet of water, how could it do so, were that depth increased to twenty, thirty, or forty feet? In fact, the more the depth of the water on the bar is increased, which can only be done by first increasing the force of the outward motion of the water, the further you remove the possibility of the formation of a new one. The depth of water is entirely and exclusively dependent upon the preponderating effect derived by the discharge of the river waters, or the force of the outward motion of the water.

From what I have said it will appear evident, that my object is to show, that the bar at the mouth of the Mississippi is caused by the diminution of the volume of water, by means of the great number of bayous or lateral outlets, which, by dividing it, check the velocity and partially destroy the power of the current; as, also, by the too great and unnecessary expanse of the channel of the passes near the Gulf. I have also endeavored to show, that the only way to remove the bar or deepen the water over it, is to remove the causes which have created it. If, therefore, lateral outlets diminish the power of a river, by diminishing the volume of its water and checking its velocity, closing them up is the best remedy, which, by keeping the volume of water that comes from above together and maintaining its velocity,

will preserve to the river the same power to deepen its channel at the mouth, that it has and does exercise at New-Orleans, or at the upper entrance of the passes. And, also, if the expanse at the mouth of the river has a tendency to weaken the power of the current that flows over the bar, and diminish its velocity, by permitting it to spread out over a wide bed, contracting it, so as to make it uniform with the average width of the channel, must be the best remedy; as the same volume of water, when concentrated, meeting with less resistance, and having a greater velocity, must certainly exercise a greater power over the bed of its channel and the dead waters of the Gulf.

ART. V.—MANUFACTURE OF SUGAR.*

THEORETIC INDICATIONS TO BE FOLLOWED OUT IN THE EXTRACTION OF SUGAR FROM RAW SUGAR-CONTAINING JUICES; AND VIOLATION OF THESE INDICATIONS, IN THE PRESENT PROCESS OF SUGAR MANUFACTURE.—THE VACUUM PAN.

A CONSIDERATION of the deductions arrived at in the previous chapters, leaves no doubt existing as to the proper indications to be followed out, in the extraction of sugar from raw sugar-containing juices. I might have said, indication,—for every subsidiary matter tends to the one great end, of reducing the complex saccharine juice, with all possible haste, to the condition of a solution of sugar in water.

Although, in practice, the sugar producer will never attain this theoretical summit of perfection, yet he should always regard the various stages of his manufacture from that assumed point of view:—which, if never permitted to be varied,—never allowed to be overcast with vague doubts,—each succeeding well-directed experimental effort will assuredly lead nearer, and nearer, to the truth. If once departed from, however—if once the sugar-extracting operation be viewed from other directions, though apparently nearer to the mark,—then the whole perspective of the theory is gone;—confusion takes the place of order, doubt of precision, fallacy of facts;—the reasoning process breaks down, and all attempts to emerge from the mental chaos are in vain.

The great aim to be kept in view during the process of sugar extraction, being the removal with all due haste of every thing except sugar and water, the subsidiary indications are, to evaporate the latter at the lowest temperature, consistent with practical necessities,—and to effect crystallization in accordance with the rules laid down before.

In carrying out the first or grand indication, it is evident that we should seek for some defecating or purifying agent which is either capable of being totally removed from the sugar solution,—or which, if allowed to remain, should be productive of no injurious tendency.

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* Continued from December number.

The latter alternative, however, would be a mere compromise; as by admitting it we immediately violate, to some extent, the grand condition of procuring an unmixed solution of sugar and water.

Having thus sketched the theoretical indications which science proclaims as necessary to be carried out, in the manufacture of sugar from raw juices, I will now offer such a general summary of the method followed in the sugar-producing colonies, as shall enable the reader to appreciate the extent to which the above theoretical conditions are violated.

It must here be premised, that, although the plan of colonial sugar manufacture for all countries is essentially, up to a certain stage, identical, yet, when various colonies are compared as to the respective process of sugar extraction followed by each,—a casual observer might imagine the existence of distinctions as essential, which in reality are merely collateral; and which involve no difference of principle whatever. As it would be exceedingly inimical to exposition of principles, to break in upon the current of observation, for the purpose of announcing mere collateral discrepancies between the machinery, or the processes of different colonies—I will here observe that, in describing the general operation of colonial sugar manufacture, in reference to the fulfilment or the violation of theoretic indications, I shall select, as typical of colonial operations in general, the process now usually followed in the West Indian islands.

Much has been written, and with great justice, on the very imperfect expression of juice from the canes by the process of mill crushing. Although experiments have demonstrated the sugar-cane to be made up of 90 per cent: on an average of juice, and 10 per cent. of woody fibre, it appears that the average amount of juice expressed by the mill is not more than 50 per cent.

The proper method of obviating this great loss of raw material is altogether a matter for the consideration of the engineer, and does not come within the sphere of chemical comment.

The juice as it comes from the mill is with as little delay as possible treated with lime, as follows, in order to effect a partial purification:—

The overseer* commences his operations by putting into a series of wine glasses some of the juice to be defecated.—He then adds to each in succession a portion of lime,—either previously mixed up

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* "The man at the clarifier first raises by heat the cane juice to a temperature of about 180°, at which time a dark scum forms at the top; he then throws into the heated juice a small portion of cream, or milk of lime. After waiting two or three minutes, until the scum again forms over the surface, he dips out a wine-glassful, and if he sees the mucilage form in well-defined flakes and rise to the top, leaving a clear liquor of a pale amber, or Madeira wine colour, he is satisfied; if not, he adds more lime; but if he finds that the mucilage will not coagulate thoroughly without such an amount of lime as would deepen the colour naturally, he stops, and trusts to the skimming."—*Moody.* †

† This is the name of a gentleman from the West Indies, who examined Dr. Scoffern's sheets and remarked upon them.—Ed.

with water, or with syrup, to the consistence of gruel or thin pap. Immediately the contact is effected between the lime and the cane juice, a discoloration of the latter ensues; the amount of discoloration varying (*cæteris paribus*)—in direct proportion to the quantity of lime employed. Having added a different quantity of lime agent to each of the glasses, the operator judges by the resulting tint, which result is the best, and he is guided accordingly by this evidence, as to the quantity of lime he shall add to the general stock of juice to be defecated.

The amount of lime being determined, it is added to the juice in a copper, or an iron vessel, hung over a fire. Sometimes this vessel is the last of a range hung over one long flue; sometimes, on the contrary, it is heated by a separate fire. In either case its contents are heated to about the temperature of 180° Fahr., when a thick crust of impurities forms upon the surface of the liquid and begins to crack. The fire is now damped, and the crust removed by skimming; occasionally,* however, the clear liquid is drawn off by a racking-cock from underneath. In order that the full defecating agency of lime shall be exerted, it is necessary to apply a greater heat than 180° Fahr.; the liquid, in fact, should be brought to the boiling point. Here, however, there is a difficulty:—immediately on the commencement of ebullition, the supernatant crust becomes broken into fragments, and mechanically incorporated with the fluid so intimately, that it can no longer be removed by skimming, but requires a filtration process to be had recourse to.

The process of clearing or defecation having been effected, and the crust separated by skimming, racking, or filtration, the process of boiling is commenced. A series of copper or iron pans, diminishing in size as they approach the fire gate, and usually four or five in number, are hung over one common flue, or rather fire-place, in which the canes, after their juice has been expressed, are burnt as fuel. This fuel generates a very powerful blast of flame, which not only plays under each of the series of pans, but may be even seen to escape from the chimney.

This plan of hanging many consecutive boiling pans over one common flue is in itself most improper. It was first introduced with special reference to the peculiar kind, and the limited amount of fuel at the operator's service, and would appear to be persisted in chiefly in deference to old opinions and customs.

† The pans, too, are usually so deep, that great violence is done to the rule, that the amount of evaporation, other things being equal, is in proportion to the extent of surface of the liquid to be evaporated.

The cane juice having entered the first of these evaporating pans, the process of evaporation begins. At this stage, the juice is merely brought to a slight simmer, the heat applied being usually insufficient

* "Almost always—I never saw the other done except with steam clarifiers in St. Croix, where they first take off the crust, then add lime afterwards, boil and skim in the clarifier."—*Moody*.

† "The arrangement of the fire and the size of the pans depend on the principle that the juice must *simmer* to allow of efficient skimming. If it *boils*, the skimmer cannot *catch* the *scum*."—*Moody*.

to cause it to boil rapidly. On the surface of this and every other pan in the series, a scum arises, which from time to time is removed by the process of skimming, and put aside for the purpose of yielding rum hereafter.

After the evaporation in the first pan of the series has proceeded to the desired extent, an attendant ladles its contents into the next—in which, and in every subsequent one, until the last two, the process of skimming is repeated.* Eventually the juice (now a syrup) is ladled into the teache, or last boiling pan, wherein it is at length brought to that degree of concentration judged most proper to admit of subsequent crystallization.

It would be impossible by mere description to convey an idea of the manifestations of the proper degree of boiling having been achieved. The peculiar sound which the syrup emits when dropped from the ladle into the general contents;—the resistance it offers on being stirred;—the peculiar appearance of its bubbles;—all afford good indications to the practised boiler; but the evidence most generally followed is that which also the refiner avails himself of at home, namely, the proof of touch. A drop of the syrup being placed between the thumb and forefinger, and the two separated, a thread of syrup is formed, of varying length, and varying tenacity, according as the syrup has been more or less boiled. In this thread, also, crystals are occasionally seen, the presence of which affords valuable evidence. In the process of vacuum-pan boiling, these crystals are the operator's surest guide.

From the last, in the series of evaporating pans, the *teache*, or *tayche*, as it is called, the inspissated juice is ladled into shallow wooden vessels termed coolers; seldom more than eighteen inches deep; where it is allowed to accrete into a semi-crystalline mass.

These shallow coolers have been loudly and justly reprehended, as most inimical to the formation of crystalline sugar; and certain it is, that a chemist, if made to draw an inference from their appearance and necessary effect, without any collateral guide,—would be constrained to infer, that in the West Indian sugar-manufacturing operation—*perfect crystallization was a result to be avoided!*

In these shallow coolers the accreted mass is allowed to remain, until it has acquired sufficient consistency to admit of its being dug out, and carried away, in buckets, to the curing-house, without leaking entirely away. In this curing-house it is put into casks with perforated bottoms, each hole being loosely stopped by the stem of a plaintain leaf; and through which the uncrystallized portions of the mass, at least in part, leak into the molasses tank.

This is the ordinary plan followed; but it is subjected to many modifications, in different places.

As might have been inferred from a consideration of the plan of curing the sugar just described, the badly crystallized mass yields up its non-crystallized portion with great difficulty. The process of curing or drainage occupies, in general, many weeks; and, even at the

* "In the last two teaches the scum is brushed back into the preceding one, the liquor being too sweet to lose."—*Moody.*

expiration of that long time, is so incomplete, that it is not unusual for some 20 per cent. of the weight of a hogshead of sugar to leak into the hold of the ship on its way to Europe, and to be pumped into the sea. In a recent case which came under my notice, 25 per cent. had thus been lost, and the master of a trading vessel* informed Dr. Evans, as I am told by this gentleman, that his ship was often one and a half foot deeper in the water off Barbadoes than when arrived in the British Channel.

In order to expedite this process of curing, recourse is had on some estates to the expensive contrivance termed a pneumatic chest. This instrument consists of a chest of iron, or copper, supplied with a false bottom, either of finely-perforated plate or cane-wicker work;—on which the sugar to be acted upon, for the purpose of drawing off its molasses, is put. Under this false bottom is a space which communicates with a powerful air-pump; by the action of which, a partial vacuum can be produced, the tendency of which is to draw the more liquid portions of the mass through the false bottom.

The effect of such a contrivance as this, when made to act upon a badly crystallized sugar, need not be indicated. Not only are the uncrystallized portions drawn into the reservoir, but also a large amount of the small ill-developed crystals.

A pneumatic chest, to be really useful, should be employed upon a well-crystallized sugar—a material which, as a general rule, drains perfectly well of itself, without any mechanical aid whatever.

The process of sugar manufacture here described is, as was previously remarked, the typical one of the West Indies; it has, however, been modified in various ways. Thus, as regards the boiling range, instead of pouring the juice from one pan to the next in order, by the process of dipping, the pans in some ranges have been furnished with valves, to admit of the passage of the fluid towards the teache. Ranges of this kind have been frequently heated by steam.

Several modifications (some, unquestionably, improvements) have been made on the teache, chiefly with the view of reducing the period during which the concentrated syrup is allowed to remain exposed to the agency of the fire. One of these modifications consists in an addition to the teache, of an internal hollow core exactly fitting it, and supplied at its under part with a valve, opening inwards. This core, technically called a "skipper," being dropped from a crane into the teache, the contents of the latter open the valve, and rushing at one gush into the core, may be removed bodily, by raising the core through the medium of the crane.

Another good modification of the teache has been introduced by the French into some of their colonies. It consists in altering the form of the teache into the shape of a coal-scuttle, the lip of which rests in such a manner on a pivot, that, at the proper time, the whole teache may be raised by leverage, and its contents poured out. This kind of teache is called a *bascule*.

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* Captain Fowlis—who estimated the loss from this cause at from 3*s*. 6*d*. to 4*s*. the cwt., or 3*l*. 6*s*. to 4*l*. the ton.

Amongst the essential modifications which have been attempted from time to time on the colonial manufacture of sugar, with variable amounts of success, may be enumerated the following:

1. Filtration of the raw juice.
2. Filtration of the defecated juice.
   a. Mechanical.
   b. Chemical (through animal charcoal).
3. Improved methods of defecation.
4. The use of the vacuum pan.*

If the impurities which are so inimical to the crystallization of sugar out of the crude juice, were merely of a mechanical nature, a process of mechanical filtration would be reasonable enough; but if those impurities be really of a chemical nature, then such mechanical filtration is entirely out of place. Accordingly, the process of preliminary filtration is spoken of with universal discontent by all who have tried it. Not only is it totally inefficacious in effecting the end desired, but it is productive of much positive harm. It has already been remarked, that raw vegetable sugar-containing juices are most susceptible of fermentation; hence the operation of filtration, even if productive of benefit in this stage, should, to be useful, be most rapidly conducted. Now this is impossible,—for chemists very well know that raw vegetable juices in general, even although thin and limpid to the view, pass through filtering tissues most tardily. Add to this the amount of porous surface, moistened with fermentable liquid, exposed during the operation to atmospheric influences; and it will be readily understood that preliminary filtration is most fatal to the interest of the colonial sugar-maker. I would, by no means, extend this remark to a rough process of straining, at this stage, for the purpose of removing broken pieces of cane, fragments of leaves, and other mechanical impurities, which might somewhat inconvenience future operations. Such an operation, however, is not one of filtration, but of straining.

Should the process of mechanical filtration be executed after defecation? As a general rule, doubtless this question should be answered affirmatively, as being a step in the right direction; but so long as lime is used as a defecator, the process of filtration will be deprived of half its value. Not only is the flocculent scum developed by lime most unfavorable to the process of rapid filtration, but the advantage gained is more specious than real, inasmuch as so many impurities still remains in juices defecated by lime, that, although the act of filtration may have yielded a liquor of great brightness, it

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* The processes of claying and liquoring, under whatever modification, are here purposely omitted, as not being improvements of the sugar manufacture—but merely an extension of that manufacture beyond the usual colonial limits, into the art of the refiner.

becomes turbid, and throws up more scum on the further application of heat.*

With regard to filtration through animal charcoal, it can never be profitably applied to the treatment of raw juices, or those as have merely been exposed to the process of defecation, without subsequent concentration. It has been demonstrated, that this agent produces its maximum effect on sugar solutions of about the density of 28° Beaumé; hence, if employed at all, it should be at the interval between the last boiling-pan and the teache. Numerous experiments, however, have convinced me that animal charcoal should never be employed in the colonies for the purpose of making any but absolutely white sugar. The beautiful straw-colored tinge, so admired by grocers, and which all sugars by a proper system of defecation can be made to assume, animal charcoal has a tendency to destroy—imparting a disagreeable neutral tint in its place.

The expense of using animal charcoal, too, in the West Indies, being somewhat about £2 per ton of sugar, is in itself a most serious obstacle to its general adoption.

The last essential improvement introduced into the colonial sugar manufacture is that of the vacuum pan, an instrument which merits a full description.

At the ordinary level of the sea the atmosphere exerts a pressure of 15 lbs. on every square inch; and, whilst exposed to this pressure, water boils at a temperature of 212° Fahr.†

If, however, by means of the air-pump or otherwise, a portion of the atmospheric pressure be removed from the water's surface, then the degree of heat necessary to effect ebullition is reduced—reduced, too, in a known and definite ratio, so that for every pound of atmospheric pressure taken off, a proportionate diminution of the boiling temperature is accomplished.

Not the most perfect vacuum which we are capable of forming, is sufficient to cause water to boil at ordinary atmospheric temperatures without the application of any extraneous heat—simply because water is not a fluid of sufficient volatility. If ether, however, which is a far more volatile liquid, be exposed to the same treatment, it boils with violence: water under similar circumstances would merely be rapidly given off in the form of vapor.

The rationale, and also the laboratory practice of increased evaporation under diminished pressure, has already been explained. It now remains to be stated, that the vacuum pan is merely an instru-

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"* The sliminess which affects the bag filters is a great disadvantage to charcoal filters. I have known the charcoal frequently clogged; and, when washed with care and placed in open casks for collection for re-burning, ferment to such a degree as to char the casks, and reduce the value of the charcoal by a considerable production of white ash."—*Moody*.

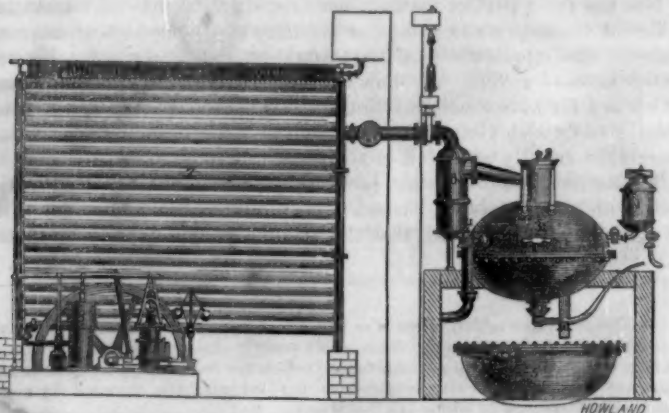
† In a metallic vessel. Gay-Lussac has proved that water boils at 214° in one of glass; owing, apparently, to its adhering to glass more powerfully than to a metal.

ment which unites to the principle of evaporating under diminished pressure, the application of a certain—but comparatively small—amount of artificial heat.

To the Honorable Mr. Howard we are indebted for the invention of this most useful instrument,* which has already effected such improvements in the home refinery process, and which is destined before long to extend its ameliorating influence to the colonies abroad.

The vacuum pan may be described as composed of two copper segments of spheres joined together at the edges. The lower hemisphere is imbedded into a steam-jacket or space, into which steam, of a varying pressure up to 3 lbs. to the inch, can be forced; and in order to increase the area of heating steam surface beyond the amount furnished by the lower segment of the pan, there passes internally a coil of copper pipe, through which a current of steam may be made to rush. It is obvious that any liquid put into a vessel of this kind, will be exposed to so large an amount of heating surface that it must soon arrive at its boiling point; but the vacuum producing part of the apparatus has yet to be described. Attached to the pan at its upper part is a pipe of communication, with a cylindrical vessel called a condenser,† and which is exactly similar to the condensing apparatus in a low-pressure steam engine; consisting either of a means of injecting a gush of cold water through a series of minute holes, which plan is called that of direct condensation, or else of a series of small tubes exposed to the external agency of water—a plan denominated that of indirect or tubular condensation. Beyond this condenser, and communicating with it, is a powerful air-pump.

The accompanying wood-cut, however, represents a condenser (7) of a different and more effective kind. It is the external condensing system of Messrs. Pontifex.



* His patent was taken out in 1819.

† Between the vacuum pan and condenser is a vessel destined to contain any solution which may boil over. This vessel, however, theoretically—may be considered as a mere expansion of the vacuum pan. This is indicated in the dia-

The action of this apparatus in the aggregate will be as follows:—The pan being filled to the desired extent with sugar solution to be evaporated, steam being let on to the jacket and into the coil, the temperature of the liquid continues to rise. Meantime the air-pump being set to work, a partial vacuum is produced, and the atmospheric pressure exerted upon the syrup in the pan is gradually lowered to such an extent, that the liquid begins to boil.

The vapor resulting from this ebullition passing into the condenser, is exposed to the agency of cold water, and immediately assumes the liquid state; finally this condensed water is drawn off by the *air* pump, as it is called, although the instrument performs the mixed function of pumping both air and water.

Such are the essential portions of the vacuum-pan, but certain accessory parts are yet to be described. The most important of these is the appendage called the proof-stick, a contrivance by means of which the operator can from time to time remove and examine a portion of the evaporating syrup without the least destruction of the partial vacuum. Attached to the copper segment of the pan is a thermometer, for the purpose of indicating the temperature of the syrup, and also a vacuum-gauge, as it is technically called, an instrument on the barometric principle, by referring to which the amount of atmospheric pressure exercised at any period on the evaporating liquid can be at once read off. On the summit of the upper segment of the pan is a man-hole,* supplied with an accurately ground cover, and by the side of it an entrance for each successive charge of liquor, which passes from an adjoining vessel of determinate capacity called the *measure*.

At the lowest part of the under hemisphere is situated a valve through which the sugar solution, when sufficiently boiled, is allowed to escape into another vessel called the heater, or occasionally the cooler.†

This heater may be compared to the lower segment of a vacuum-pan, minus its coil, being a copper pan, imbedded in a steam jacket, by the agency of which a graduated heat may be applied.

The use of this instrument is to allow the conditions of time and prolonged fluidity for the more perfect development of those crystals,

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gram by the figure 6. The other portions of the apparatus are as follow: (1) the measure, (2) the man-hole, with ground cover, (3) vacuum-pan, (4) proof-stick, (5) heater, (7) condenser, (8) steam-engine and air-pump, (9) escape valve of the vacuum-pan, through which its contents pass into the heater.

* The aperture through which a man enters the vacuum-pan for the purpose of cleaning it.

† The indifferent application of the term heater and cooler, the one for the other, is curious, although easy to be explained. So long as sugar solutions were boiled in open pans under the ordinary atmospheric pressure, and at a temperature of 220° and upwards, the vessel in which the boiled liquor was allowed to assume a temperature of 176° might appropriately enough be denominated a cooler. But under the process of vacuum-pan boiling, at a temperature of about 140°, this vessel, in which the latter degree of temperature becomes changed to 176°, as before, is to all intents a heater; still the old name is in many refineries maintained.

the formation of which had been already commenced during the operation of vacuum boiling.

Fuller details of the employment of the vacuum-pan and its accessory, the heater, will be given under the head of "refinery operations,"—such a general account of these instruments merely being here given, as might suffice for the purpose of investigating the advantages and disadvantages of the colonial operation of vacuum boiling.

It is a subject of much surprise to many persons who have witnessed the results of vacuum-pan boiling at home in refineries, that when used in the colonies it has been productive of such ambiguous results. This surprise will vanish when we consider the conditions under which a vacuum-pan can be profitably worked, and how difficult of attainment these conditions have hitherto been in the colonies. However objectionable in most points of view the ordinary colonial evaporating process may be, it nevertheless is well adapted to the end of removal of impurities by surface skimming—an operation which is totally impracticable when the vacuum-pan is employed. Hence, although this valuable instrument exercises the full amount of its well-known and legitimate influence—although it may effect evaporation at the practical minimum—although an experienced boiler may be present to *strike* or let off its contents at the proper time; still the result of boiling an impure juice in vacuo will in all cases be—an impure sugar.

This fact is at length becoming so well recognized, that a gentleman of much practical experience, as an engineer in the West Indian colonies, informs me of a resolve he had made, never again to set up a vacuum-pan on any West Indian property, (save a few exceptional estates on which the juice was remarkably pure,) except under a guarantee that the juice should have been submitted to charcoal filtration—this being the only means at that period known to him, as capable of effecting the necessary amount of defecation.

It may very safely be asserted that the great utility of the vacuum-pan has yet to be demonstrated to colonial sugar growers. Hitherto, even on estates where it has given a qualified satisfaction, the true genius of the instrument has been altogether misunderstood. Instead of aiming at the production of a well crystallized result, mixed with a thin syrup of drainage, or molassess, admitting of easy removal, and then leaving the sugar almost dry, the general aim of the colonial sugar-maker has been to produce, by high or stiff boiling, the maximum amount of semi-crystalline produce. If this kind of material were a marketable commodity in its present state, the endeavor of aiming at its maximum produce would be intelligible; but as it requires the expensive process of liquoring to render it fit for the market, the process of stiff boiling is in contravention of all proprieties.*

* Dr. Evans informs me that in the island of Java there are used vacuum-pans having an escape aperture in the side, through which the solid concrete is shovelled by a man sent into the pan for that purpose, after each boiling operation. A patentee, moreover, actually proposes to grind this kind of concrete into grains by a mill!

The method in which the process of liquoring is commonly practised in the West Indies is fearfully wasteful, and in other respects open to the greatest censure.

Under the definition of liquoring, the principle of that operation has been explained. I will now offer, in anticipation of another part of this treatise, a concise explanation of the mode of conducting it in refineries, in order to demonstrate most powerfully the destructive mode followed in the colonies.

Under the proper conditions of temperature, hereafter to be mentioned, the refiner puts his boiled and crystalline syrup into moulds, supported on their apices, and the hole of each apex stopped with a pledget of brown paper. Here the mass is allowed to cool; and, when cold, the plug in the apex being withdrawn, each mould is supported on a corresponding earthen pot. A portion of syrup, technically known as green syrup, more or less colored, now drains away, and the cone of sugar is left comparatively dry. The sugar forming the base or face of each cone being now removed by a revolving cutter, termed the *facing machine*, the sugar so removed is mixed with water to the consistence of a thin magma (technically named clay), and reimposed on the base of the cone. This is the operation termed in refineries claying. After some hours the operation of liquoring commences by pouring on the smooth surface, or face left by the subsidence of the clay, a concentrated aqueous solution of sugar. The result of this operation is, that the coloring matters of the sugar are totally washed into the pot below, and a loaf of white sugar is formed.

As conducted in refineries, the operation of liquoring is most philosophical, and most efficient—an operation without which, or the equivalent one of prolonged claying, a thoroughly white sugar cannot be made. Its success depends so entirely on the purity and saturation of the *magma liquor*, or aqueous solution of sugar, that the preparation of the latter is a matter to the intelligent refiner of greatest solicitude. If the magma liquor be *colored*, it is evident the sugar which it is employed to wash cannot be *colorless*. If the magma liquor, also, be not fully saturated, it will become so during percolation, at the expense of the sugar which it is intended to cleanse,—and the loaves will be partially dissolved. This is too evident for further comment. What, then, would be thought of the refiner, who, in violation of the obvious principles just laid down, should attempt to liquor by means of water? And yet this is the kind of liquoring very frequently performed in some of the West Indian islands where vacuum-pans are used. The concentration having been carried on, as I have already remarked, to a higher extent than propriety warrants, the mass is cooled, thrown into a pneumatic chest, and affused with water by means of a garden-pot! The air pump is now put vigorously to work; a partial vacuum is produced underneath, and the water of affusion, carrying with it many impurities, and much sugar also, is drawn into the cistern below. It is a fortunate circumstance that the crystals or grains of vacuum boiling are usually large, and, therefore, less easily soluble than they would

be if they presented greater surface to the agency of the solvent—otherwise the loss attendant on this most improper operation would be greatly augmented. The final result of this rude process of liquoring is, a large-grained dusky yellow sugar, now generally used for the purpose of sweetening coffee. Considered in the abstract, without reference to the steps by which it was obtained, this sugar might be taken as a proof of the benefits of colonial vacuum-pan boiling; and hence, from want of a fuller acquaintance with the subject, the most erroneous notions have been disseminated.

The rude process of liquoring by water, already described, is not invariably followed, it is true, in the colonies; sometimes a portion of juice, defecated and evaporated, to a certain extent, is substituted. Occasionally, too, the refinery process of making pure magma liquor has been adopted, but still under circumstances involving the greatest improprieties.

The propriety or impropriety of the claying and liquoring operations, in the colonies, can only be correctly judged of by reference to the precise end desired to be achieved. Thus it is possible to conceive a manufacture injured, even to ruin, by instituting false comparisons between it and another, and by the introduction of appliances, admirably adapted to the former case, but adverse to the latter. The colonial application of the process of liquoring, even when well managed, is emphatically open to the remarks just made. The refiner's object is to procure a white sugar, and the process of liquoring is absolutely necessary to give him this; therefore, cost what it may, the operation must be followed. The object of the colonial sugar-maker, however, is, and has been, to obtain a *yellow* coloured sugar; a staple which may be made in the greatest perfection of tint without the employment of any claying or liquoring process whatever; without charcoal, alumina, or lime; as will be hereafter demonstrated. True it is, that if the cane juice be boiled too high, especially if in contact with lime, and other impurities, the process of liquoring will be required to remove such a portion of them, that the resulting sugar shall have a marketable colour. But the contemplation of this fact brings us back again to the conclusion already arrived at:—That no secondary appliances—not even the vacuum-pan—can accomplish any great amelioration of the sugar produce, whilst made to operate upon an impure juice.

Under the definition *Claying*, has been given a condensed account of the colonial process of claying. It is necessary now to contemplate it a little more narrowly in detail. The operation is more particularly followed by the Spanish and Portuguese colonies; and in a modified form also by the natives of Hindostan.

The general manner of conducting the operation is as follows:—Instead of putting the sugar to be drained into casks, it is placed in large earthenware or iron cones, after the method of refineries, and the green syrup is allowed to percolate away.

At this period, a magma or pap of white clay and water is superimposed; the agency of which is, manifestly—to wash away a portion

of the chemical coloring impurities existent in the yellow sugar. The operation of claying is repeated twice or thrice, each coat of clay as it dries being removed, and another substituted in its place.

This claying operation is a most extravagant one; involving the loss of a third part of the original contents of the cone; and producing, after all, a sugar which, even at the base of the cones, or nearest to the clay, is far from white.

It has already been remarked, that in India a modified process of claying is pursued. An equivalent process would be a more correct expression; but not to discuss one principle under many heads, the term claying may be retained to express the Indian operation.

Instead of using clay, or a magma of sugar and water termed clay by the English refiners, the Hindoos generally attain the end of washing their raw sugar partially white, by superimposing on the base of the conical contents masses of hygrometric weeds or damp cloths; the effect of either being—the gradual liberation of water, and, consequently, the partial removal of chemical coloring impurities.

By following the processes of claying or liquoring, under almost any of their modifications, the darkest sugars may be made comparatively light colored; and thus may be made to yield a product capable of misleading the unwary.

Thus it often happens that samples of light colored sugars are displayed, and appealed to, as triumphs of some new method of sugar manufacture,—the only beauty of such sugars being such as is derived from the claying or liquoring processes; and which sugars, before the application of these processes, might have been almost black. This mode of displaying sugars is a piece of charlatanry which cannot be too severely reprobated. There is another, scarcely more defensible, namely,—the display of large crystals or grains, which every chemist knows any sample of cane sugar can be made to assume, by mere devices of evaporation and cooling.

It cannot, however, be a matter of wonder, that the latter deceit should be largely practised, when it is considered that the sugar community has elevated the question of grain into a most unsafe position; and has made it a false criterion of qualities with which it has no connexion whatever.

The sugar broker, or refiner, attaches great importance to the touch which certain sugars impart when pressed, or rubbed between the finger and thumb; and accordingly as it feels soft or hard, it is pronounced weak or strong:—this criterion, like many others which have been misapplied, is, within proper limits, safe and good;—without those limits, productive of serious errors.

The first body into which sugar becomes changed, in the downward series of destructive metamorphoses, is glucose or grape sugar; which, if present in any considerable quantity, is most inimical to the formation of large crystals; it moreover imparts to the mass a condition of clammy pastiness. Under these circumstances, the sense of touch would be a very safe guide to the purchaser of raw sugar; who would be acting consistently in repudiating all sugars possess-

ing small grain, *from this cause.* But the rule may be extended to the furthest limits of falsehood; even to the absurdity of pronouncing refined sugar in powder—*weak*, but the same sugar in the lump—*strong.*

Having discussed the fallacy of being guided implicitly by the sense of touch, it remains to show the fallacies attendant on the sense of taste.

Nothing is more common than the affirmation, that one certain sugar has more sweetness than another, or that it possesses more saccharine matter; and, to place the affirmation in its most absurd light, the amount of sweetness or saccharine matter is made to decrease in proportion to the purity of the sugar. Thus, it is a very common affirmation, that white sugar does not sweeten so well as yellow sugar; in other words, that pure sugar does not sweeten so well as that which is impure:—*because the former has less saccharine matter than the latter!* Such is the common assertion:—one that may be heard very widely disseminated indeed—from the cook in our own kitchens, to the brokers in Mincing Lane; and, strange to say, in refineries too. Once admit the assertion to be valid, and to what a chaos of absurdity are we led. The whole system of sugar refining, with all its costliness, all its complexity, all its experience, is prosecuted—for what? To render sugar less saccharine,—to effect a destruction! Such is the necessary conclusion.

To explain these discrepancies between language and facts, is not so difficult as it may at first seem,—they originate in the use of lax expressions, based upon the evidence of the most fallacious of all our senses—the sense of taste.

It is a fact very well known to physiologists, that when certain tastes of different kinds and of different amounts of intensity are combined, so that they affect the gustatory organs at once,—the judgment, although unable to discriminate between them, and forming a conception alone of that taste which is most familiar, or most predominant *as to kind;* nevertheless as to the qualities of strength or pungency,—the judgment conveys a mixed idea of both. Or when two bodies are mixed,—one alone of which has a taste,—(practically or absolutely)—the effect of the tasteless body is often confounded with the effect of the other.

The above is not a mere fine-wrought philosophical deduction; but one which has been applied to practice, and its truth demonstrated in many ways. Thus the dishonest tavern-keeper adulterates his spirit, particularly gin, with tincture of capsicum, and his beer with cocculus indicus:—in either case to impart a fictitious alcoholic strength. The most untutored palate would distinguish between the taste of gin, and of cayenne pepper, alone: but, when mixed in certain proportions, the pungency imparted by the latter to the gustatory organs is recognized, but not discriminated—both together conveying the vague idea of strength.

As to cocculus indicus, it is devoid of pungency, but is a narcotic; nevertheless, the judgment is equally deceived as in the former case.

Again, to take another instance, there are few snuff-takers with nasal organs so obtuse, as to be incapable of distinguishing lime, powdered glass, extract of logwood, sand, sal-ammoniac, or smelling salts, from the powder of tobacco. Yet in the form of snuff the nose is continually deceived. All these foreign bodies may be and frequently are mixed with snuff to give it a pungency; each agent conveys an impression, but loses its individuality—the idea of tobacco preponderates over all the rest.

Thus is it with impure or colored sugars, which consist of sugar, plus many foreign bodies, each possessing its own abstract individual taste;—conveying when alone a notion both of kind and degree;—but when in conjunction—only the latter: which goes to augment the predominant idea of sweetness, conveyed by the most familiar, most prevailing substance of the mixture—sugar.

Here is a fruitful source of the fallacy adverted to; but there is another. The idea of sweetness, as conveyed by sugars equally pure, varies in direct ratio to the amount of comminution: Hence large-grained sugars seem to be less sweet than those the grains of which are small. The reason of this will be evident, when it is considered that all substances which are insoluble in the saliva are totally devoid of taste,—and that the taste of all other substances is in direct ratio to the rapidity with which they are dissolved in the mouth.

It is very evident, then, that the sense of taste is far too fallacious in its nature, and tends to inferences far too vague, for the decision of such an important matter as the amount of actual sugar in any saccharine mixture; such as raw sugar, under any of its conventional denominations, must be regarded. Neither is the test of specific gravity at all more decisive; for, in the most impure of raw sugars, the total amount of impurities bears but a very trifling ratio to the mass; and, moreover, possesses a specific gravity so little different from that of sugar, that for all practical purposes it may safely be asserted, that all samples of raw sugar, of equal dryness, form, with equal amounts of water of equal temperatures, solutions, the specific gravities of which are also equal. Hence the hydrostatic or saccharometer test cannot, any more than other plans of taking specific gravities, convey the least idea of the purity or impurity,—the goodness or badness, of raw sugars.

Having successively considered the chief methods pursued to effect drainage of the non-crystallized from the crystallized portion of concentrated saccharine juices, and in what respects they are adequate or inadequate to the end desired, it now remains for me to devote some attention to the product of such drainage; which product is denominated by the vague term "molasses."

It may be inferred from former remarks, that the investigation of the nature and properties of molasses will best be prosecuted by starting from the assumption that sugar may be concentrated by evaporation, without any destruction whatever: in which case the molasses, or liquor of drainage, would be the precise analogue of that resulting from crystallized saltpetre would consist of nothing but a solution of

sugar in water. I have already remarked that this condition it is impossible absolutely to achieve; but by removing from the solution to be evaporated all destructive agents, and by properly regulating the application of heat, the amount of destruction may be reduced to such a minimum, that the molasses, or syrup of drainage, shall virtually, though not actually, be an aqueous solution of pure sugar.

Descending from this extreme summit of excellence to the other extreme of the scale, we at length arrive at the results of Soubeiran's experiment, wherein every particle of sugar was destroyed.

Within the limits bounded by these two extremes, the ratio between the amount of sugar destroyed, and the amount crystallized, may vary indefinitely; each product yielding a liquor, or syrup of drainage, to which the general term molasses will be applied; although such liquor of drainage may be anything from an aqueous solution of sugar, accompanied by some mere traces of foreign bodies, up to a compound of little else than glucose, mixed with its black acid derivatives.

It is evident, therefore, that the term molasses is a most indefinite one, and should never be used in argument unless its meaning have been specially limited to the conditions of the instance under discussion. It appears, then, that liquor of drainage, or syrup, (molasses,) there ever must be, as the result of the crystallization of sugar, even under the most favorable circumstances; and the question of the best mode of treating it, for the purpose of obtaining its sugar, must be determined by reference to its richness in that substance.

And here the sugar producer is met, on the very threshold of his subject, by the necessity of accommodating his operation to an ill-defined popular taste. Were it a question with the colonial sugar producer of selling the pure material—*sugar*, his course might indeed be very difficult, but it would at least be well defined. At any price, cost what it might, he would be driven to cleanse all his raw crystallized material from every particle of coloring, or other non-crystallized substances; in other words, from every particle of its *molasses*. Such, however, is not the desideratum which the sugar producer has in view; the public expects him to produce a colored sugar; that is, a white sugar, each crystal of which is coated with a certain amount of molasses; to which latter the qualities of moistness and color are due. Now the question of how much molasses shall be thus allowed to remain as a coating, involves the consideration of such indeterminate matters as, variety of popular tastes; of manufacturing expenses; the comparative value of sugar and rum, &c. As a general rule, however, the West India sugar producers, (those of Jamaica excepted, who obtain a high price for their rum,) consider it profitable to boil the juice very stiff, and export the muscovado sugar in a very undrained state. The glaring impropriety of this procedure has already been pointed out; therefore I need not advert to it again. It is desirable, however, to find adequate causes for a practice which appears so repugnant to all common intelligence.

The causes are chiefly as follow: 1. The desire of the overseers to

make a display of the quantity of sugar shipped. 2. The low market price of molasses by itself, compared with the market price of molasses as forming a part of muscovado sugar. It is painful to have to record the fact, that the real owners of a great number of West India estates are not the ostensible ones, but merchants or brokers at home; who, by way of mortgage, have a direct lien on the property; and, indirectly, have the privilege of exclusive management, with all the commercial advantages thereby accruing. Under these circumstances it is too frequently an object with the resident agent to make a display of a large amount of sugar produced on his estate, whereas the amount is merely one of sugar, plus the molasses absorbed. The material being thus placed on shipboard moist and undrained, may, under the circumstances of a fair wind, and easy passage, arrive here without great loss. If it do so arrive, its sale may be accomplished. The English grocer, by dint of mixing it with dry refinery pieces, and a certain portion of dry East India or Mauritius sugar, at length forms a compound of remunerative selling price, and all parties are satisfied. If, however, the passage should be rough, causing much agitation to the cargo, if the temperature should be unusually high, or the hogsheads unusually leaky, then a large portion of the molasses percolates into the hold, and is pumped overboard.

Thus the present West Indian sugar manufacture is made to assume an appearance of risk and uncertainty which, so far from necessarily belonging to it, at least in the way indicated, may, by a system of improved treatment, be prevented altogether.

It is a question very commonly put by the colonial sugar producer, whether a specimen of sugar resulting from a certain process will stand the voyage? To such a question there is one general answer. Any sugar will stand the voyage provided it be well drained, and that it be freed from all impurities which are of a deliquescent nature. Sugar itself is unalterable, in an atmosphere of very considerable dampness; and the mere adherent brown, or yellow, coat of molasses, which imparts the peculiar color and sensation of moisture, without clamminess, to good muscovado sugar, is not sufficient in itself to cause any loss by drainage.

As regards the second reason which influences the West India sugar producers in allowing their staple to be largely admixed with molasses, viz.: the low value of molasses by itself as compared with that of molasses when it forms part of muscovado sugar—it will be evident, on reflection, that the amount of sugar contained in bad molasses may be so small, so much admixed with impurities, that it either may not pay for re-evaporation, or that it must be evaporated alone. To evaporate it in the teache, mingled with fresh or uncrystallized syrup, would be impracticable, on account of the mass of impurities which would be thus imparted. It will be, moreover, evident, that beyond a certain point of richness in sugar, and general purity, molasses may thus be treated with propriety. Hence we are brought again to contemplate the first grand source of all improvements in the colonial sugar produce—the perfect defecation or puri-

fication of the juice. Until some process conducive to this end be generally followed by our colonists—until some means be devised of rendering the molasses or syrup of drainage so pure, that it may be returned without prejudice to the teache, and boiled with the concentrating juice, the chemist will expatiate in vain on the theoretical indications of low boiling and perfect drainage, as necessary to the production of a well crystallized sugar. So long as the general run of molasses is of its present average impurity, so long will it be impossible to be boiled except alone—a process involving the use of more fuel than the West Indian colonist can command; indeed, if he could, the result would be scarcely marketable; and so long will the weight of semi-solid saccharine produce (sugar is a wrong term) obtained, be the result of the first, and only boil. If, however, the sugar producer could be made to follow some plan of defecating his juice, that would insure a molasses so pure that it might be returned to the teache, and the process repeated through several operations, he would then have no plea for the continuance of his present ill-judged plan, which may be, without impropriety, designated an operation of smuggling, devised for the purpose of selling molasses under the name of sugar.

If the West Indian sugar growers were to be furnished at once with a never-failing means of producing a large grained, and therefore an easily cured, sugar, to the exclusion of all other sorts, their produce would have to encounter a difficulty which the consumer would scarcely have imagined. Such large-grained sugars are very unfavorable to the perpetration of certain mysterious operations of legerdemain,* which grocers understand too well. They will not mix. A small grained sugar may readily be incorporated with glucose, with pieces, or bastards, and other less innocent bodies, without such incorporation being discoverable to the eye. A large-grained sugar, on the other hand, is a most refractory material for these little manipulations; its crystals, no matter how mingled with contaminating agents, never ceasing to manifest their native brilliancy, and thus proclaiming the fraud. It is most easy, then, to understand why the grocer, as a rule, does not encourage these large-grained sugars. He cannot "*handle*" them, and therefore brands them with a fault. He says they are deficient in saccharine matter—that they will not sweeten. True it is, that comparatively small portions of these large-grained sugars are sold,—and sold at high prices; but merely as fancy articles, on the proceeds of which the grocer nets too little, to make their sale an object of primary solicitude.

Such is the source of one prejudice against dry and large-grained sugars—a prejudice originating amongst the grocers. There is also another, which originates amongst refiners;—who are adverse to the general consumption of these beautiful colonial sugars, for the very obvious reason—that the consumption of their own staple is thereby lessened. The refiner's expressed objection is remarkable, as em-

* Termed by grocers "*handling*."

bodying a philosophic idea not at all known to chemists, and, in fact, adverse to all chemical analogy. He is in the habit of saying that such large-grained sugars produced in the colonies contain a great amount of water, and that hence they are, what he terms—weak. Now, for the sake of argument, we will assume this to be the fact, and will see how it bears upon the refiner himself. If the vacuum-pan accomplishes the incorporation of water with sugar in the colonies, of course a similar effect results at home *in refineries*. Hence the refinery operation, thus proved to consist in effecting the crystalline incorporation of water with sugar, must be profitable beyond any limits which the public, and the Chancellor of the Exchequer, have hitherto assumed: and this enormous profit should be at once adequately taxed! To such absurdities are we led, by arguing from loosely-expressed current data.*

Having pointed out the injurious agency of lime as a defecating agent, I will now pass in review the chief methods which have been had recourse to from time to time for accomplishing the important end of defecation, without the employment of that destructive,—although not very efficient,—alkaline earth.

And here I will remark, that there scarcely exists a mineral salt, of whatever kind,—that does not, when a solution of it is added to sugar-containing juices, at the proper temperature—usually about 180°,—cause the precipitation of bulky, flocculent masses; being combinations of the impurities existing in the juice, with the mineral base of the salt. By witnessing effects of this kind, persons unacquainted with chemistry have been led to the most unsafe conclusions, and numerous are the pseudo-discoveries thus palmed upon the world.

To defecate merely, or effect the separation of impurities from sugar-containing juices,—is but one portion of the problem to be

* Lest it be thought I unjustly impugn the science of practical men well conversant with sugars, I will here mention two circumstances; one for the truth of which I vouch, the other communicated to me by one of our largest metropolitan copper manufacturers. Towards the end of the summer of 1848, I showed a London broker a very fine sample of well crystallized colonial sugar. His comment was most peculiar. He told me that—"now-a-days popular taste required the grain of sugar to be of a different shape to mine; people now liked grains with *rounded angles!*" The copper worker's anecdote is as follows:—"I was once sent for in a great hurry," he very naively told me, "to a refinery where a vacuum-pan of mine had been some time in work. I lost no time in hastening there, for the message was urgent. 'I want you to get a hole bored in the dome of that pan,'—was the sage request of the refiner, on my arrival. 'A hole in what?' said I. 'In the dome of that pan,' answered the refiner. 'But for what?' 'Because it is too tight—there is too much vacuum—in short the pan won't do.' In vain I remonstrated, in vain I pointed out the absurdity. The refiner had only one answer,—'His boiler said the pan was too tight—and bored a hole must be forthwith.' It was accordingly done." In fairness to the refiner it should be remarked, that his vacuum-pan had formerly a leak in it; which leak having been stopped, the boiler *fancied* that the pan worked less satisfactorily than before. From these premises a very absurd conclusion was arrived at, as we have seen.

solved. The defecating process must be effected without destruction to the sugar; and by an agent that is so perfectly under control, that any excess of it, above the quantity necessary to effect defecation, shall be easily removable. For practical purposes, another and a most important condition must be achieved :—the whole must be effected within the limits of a remunerative cost.

It is painful to con over the numerous projects,—specious enough at a first glance, but in violation of the rules of guidance, or indications laid down,—which have been thrust upon the sugar producer, and the refiner, so often, and with such unvarying failure,—that all new plans, however intrinsically good, are regarded always with suspicion and doubt,—often with neglect or contempt.

Thus, in a patent specification lately published, sugar solutions in the colonies, and in refineries, are proposed to be defecated by operations that would effect the liberation in the sugar of—nitric, sulphuric, prussic, and oxalic acids;—without any provision for removing either of these deadly substances! Fortunately there is a chemical safeguard here. The presence of a minute trace of oxalic acid prevents the crystallization of sugar,—and the same remark applies, though less forcibly, to the presence of nitric and sulphuric acids. The author of this patent being totally ignorant of chemistry, was misled by the fallacious appearance of a mere separation of coagula.

Foremost amongst the materials which have been employed at various times, both in the colonies and for refinery use, is the earth, alumina, in some of the various states which it may be made to assume. The idea of employing alumina seems to be derived from a somewhat analogous application of this substance, for the making of vegetable coloring matters, termed lakes. Thus, if a decoction of logwood be mixed with a solution of the salt alum,—which is a compound of sulphuric acid, potash, and alumina,—and a solution of potash added, the earth, alumina, is set free; and immediately combining with the coloring matter of the logwood, both fall in union, and constitute a precipitate which, when dried and powdered, is called a lake. Instead of logwood, various other vegetable, and some animal, coloring bodies, may be substituted; and with a similar result.

Following out this idea, alumina has been employed with the view of separating the coloring matters out of solutions of muscovado sugar, and the general vegetable impurities out of cane-juice.

On cane-juice I have never had an opportunity of trying it; but on solutions of muscovado sugar I have frequently tested the powers of alumina, without, in any case, being much struck with its utility. A certain defecating effect it unquestionably produces; but by no means to the extent that would induce one to anticipate any vital or radical improvement in the sugar manufacture,—home or colonial,—by generally adopting it. Not long since I was called upon to witness the effect produced by a mixture of alumina, sulphate of lime, and bone black, on a solution of Khaur sugar.* The experiment was

* A most impure result of the native sugar manufacture in Hindostan.

shown me as a triumph, but I was at a loss to conceive how the result could have been worse.

Alumina, as prepared in its purity by chemists, would be inapplicable to the purpose indicated, no matter how successful in its results,—merely from considerations of expense :—many cheap modifications of the material have, therefore, been from time to time devised. One of the most general of these was discovered by the Honorable Mr. Howard (the inventor of the vacuum-pan) in 1812; and consists of a mixture of sulphate of lime, free lime, and alumina. This mixture, commonly known as *Howard's Finings*, is prepared by adding to a solution of alum and water, a portion of cream of lime, sufficient to combine with all the sulphuric acid of the alumina, to throw down the alumina, and to leave an excess of lime. The supernatant liquor of this operation, consisting of sulphate of potash, must be absolutely washed away, or it will impart an injurious quality of deliquescence to such sugar as may be prepared with the finings. In a patent of some years' standing, chalk instead of lime is used to decompose the alum; with what advantage, however, is not so obvious.

In France and other countries where sugar is largely manufactured from beet-root juice, the *sulphate of alumina*—(not alum, which is the potash sulphate of that base)—is largely employed as a defecating agent. On solutions of muscovado sugar I can affirm from experience, that its defecating properties by no means come up to the expectations I had been induced to form.

Very far superior to all other agents as precipitants for the vegetable impurities of natural sugar-containing juices,—as also for the impurities existing in muscovado sugar,—are the acetates, particularly the basic, or sub-acetates of lead.

So wide is the sphere of operation which these bodies possess, as precipitants of the albuminous and colored matter of vegetable juices, that even the juice of beet-root, which, after being allowed to remain in contact with the air for about half an hour, becomes black,—is instantly purified to such an extent that, when filtered, it resembles water. Not only do these salts of lead precipitate the general impurities from raw vegetable juices,—but even a number of dark colored decoctions are rendered, by treatment with it, comparatively colorless in a few instants. Chemists have long been aware of this property—have long used the acetates of lead as precipitating agents for certain albuminous and colored matters, in the laboratory, with the most perfect success; every attempt, however, to employ these agents satisfactorily, even on the small scale, for the purpose of throwing down the impurities from muscovado sugar in solution, or from cane-juice, was unsatisfactory; whilst on the large scale, the attempt, when tried, failed altogether.

The reasons of this failure, in the employment of lead salts for the purpose indicated, are various; as will presently be recognised.

The first problems to be solved are these: either to use the lead salt in such exact proportion to the amount of impurity with which it is intended to combine, that both shall fall down in combination,

and be capable of removal; or to add a known excess of lead salt to the sugar solution,—to separate the precipitate caused by filtration,—then to throw down from the filtered liquor all the remaining lead by means of some precipitating agent not productive of injury to sugar: and, as a subsidiary problem,—to remove the acetic acid liberated from the lead, either as an insoluble compound, or to combine it with some body that shall neither be injurious to sugar, nor to health,—and separable, if possible, by the process of drainage.

Such are the necessities of the case,—even in the laboratory, on a small scale. Let us examine how they can be met.

The first problem does not admit of solution;—it involves an impossibility: inasmuch as, however small, above a certain microscopic limit, the quantity of lead salt added,—the filtered solution will still contain lead: although a fresh addition of more lead salt to the filtrate will not fail to produce a new precipitate. This circumstance can be accounted for, by assuming the concurrent formation of two or more compounds of lead and vegetable matters; one compound being soluble, and the other not.

In operating on sugar thus,—we are reduced to the necessity of disregarding, as a means of safety, all apportionment whatever:—the only way left open to us is, to precipitate the excess of lead.

Simple as this may appear as a laboratory operation, it cannot be accomplished by the ordinary laboratory means. The usual agent employed by chemists to separate lead out of solutions is hydrosulphuric acid gas;—a body which throws it down effectually from sugar solutions, it is true, but spoils the sugar:—in consequence of the facility with which, by trifling circumstances, it is decomposed, with the liberation of sulphur. Hence, so frequently had the experiment been tried, and with such uniformly bad success, that not only was the idea of employing these agents in combination relinquished, but the ruin of the sugar was attributed not to the proper cause—viz: the effect of hydrosulphuric acid employed to separate the lead:—but to the lead itself.

The employment of hydrosulphuric acid thus being out of the question, we have next to examine the other means commonly employed in the laboratory for accomplishing that end. Occasionally sulphuric acid* is used to separate lead out of solutions; which end it accomplishes perfectly, even out of those of sugar; but if sulphuric acid be employed, it is incumbent on the operator to add one exact quantity—no more—no less: if too much, the free or uncombined overplus of acid, by acting on the sugar, would speedily convert it—first, into glucose, and thence downward in the scale of destruction into glucic, melasinic, sacchulmic, sacchumic acids, &c.: if too little, there would remain an excess of lead; which not only is injurious to health, but, also, if boiled with sugar, a very destructive agent.

The question of lead, then, as a defecator for sugar, seemed hope-

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* Sulphuric acid has lately been tried by a gentleman in India, who utterly failed, however, in achieving the object proposed.

less. Its remarkable action was witnessed, admired, and abandoned; until in the year 1839, Messrs. Gwynne and Young took out a patent for the separation of the excess of lead by means of the diphosphate of lime;—an agent which, in the laboratory, can be made to succeed perfectly; but which I believe to be, both on the score of expense and uncertainty, totally inapplicable on the large scale.

These gentlemen, however, deserve great praise for their investigations; which are, chemically considered, of a masterly kind. Although the operation necessarily failed in practice, for reasons which I have indicated, its perfect success in laboratory quantities demonstrated the most important fact,—*that the acetates of lead*, per se, *were not injurious to the constitution of sugar.*

This demonstration having been accomplished, the chemist was warranted in resuming the task of finding out some precipitating body that should not only act in the laboratory under chemical superintendence; but one that should act anywhere, and in any quantity.

Such an agent I was fortunate enough to discover in July, 1847. This precipitant is sulphurous acid gas: the methods of employing which I have recorded in another publication, and therefore need not repeat here; seeing that my present object is simply to record a chemical fact.

Since the period of July, 1847, the efficacy of this gas has been tried on the large scale in a refinery, and also on cane juice; in both cases with the most perfect success.

ART. VI.—CHANCELLOR HARPER'S MEMOIR ON SLAVERY.*

It is worthy of remark, that there does not now exist on the face of the earth, a people in a tropical climate, or one approaching to it, where slavery does not exist, that is in a state of high civilization, or exhibits the energies which mark the progress towards it. Mexico and the South American republics,† starting on their new career of

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* Continued from December Number.

† The author of England and America thus speaks of the Columbian republic:

"During some years, this colony has been an independent state; but the people dispersed over these vast and fertile plains, have almost ceased to cultivate the good land at their disposal; they subsist principally, many of them entirely on the flesh of wild cattle; they have lost most of the arts of civilized life; not a few of them are in a state of deplorable misery; and if they should continue, as it seems probable they will, to retrograde as at present, the beautiful pampas of Buenos Ayres will soon be fit for another experiment in colonization. Slaves, black or yellow, would have cultivated those plains, would have kept together, would have been made to assist each other; would, by keeping together and assisting each other, have raised a surplus produce exchangeable in distant markets; would have kept their masters together for the sake of markets; would, by combination of labor, have preserved among their masters the arts and habits of civilized life." Yet this writer, the whole practical effect of whose work, whatever he may have thought or intended, is to show the ab-

independence, and having gone through a farce of abolishing slavery, are rapidly degenerating, even from semi-barbarism. The only portion of the South American continent which seems to be making any favorable progress, in spite of a weak and arbitrary civil government, is Brazil, in which slavery has been retained. Cuba, of the same race with the continental republics, is daily and rapidly advancing in industry and civilization; and this is owing exclusively to her slaves. St. Domingo is struck out of the map of civilized existence, and the British West Indies will shortly be so. On the other continent, Spain and Portugal are degenerate, and their rapid progress is downward. Their southern coast is infested by disease, arising from causes which industry might readily overcome, but that industry they will never exert. Greece is still barbarous and scantily peopled. The work of an English physician distinguished by strong sense and power of observation*, gives a most affecting picture of the condition of Italy,—especially south of the Apennines. With the decay of industry, the climate has degenerated towards the condition from which it was first rescued by the labor of slaves. There is poison in every man's veins, affecting the very springs of life, dulling or extinguishing, with the energies of the body, all energy of mind, and often exhibiting itself in the most appalling forms of disease. From year to year the pestilential atmosphere creeps forward, narrowing the circles within which it is possible to sustain human life. With disease and misery, industry still more rapidly decays, and if the process goes on, it seems that Italy too will soon be ready for another experiment in colonization.

Yet once it was not so, when Italy was possessed by the masters of slaves; when Rome contained her millions, and Italy was a garden; when their iron energies of body corresponded with the energies of mind, which made them conquerors in every climate and on every soil; rolled the tide of conquest, not as in later times, from the South to the North; extended their laws and their civilization, and created them lords of the earth.

> "What conflux issuing forth or entering in;
> Prætors, pro-consuls to their provinces,
> Hasting, or on return in robes of state.
> Lictors and rods, the ensigns of their power,
> Legions and cohorts, turms of horse and wings:
> Or embassies from regions far remote,
> In various habits, on the Appian road,
> Or on th' Emilian; some from farthest South,
> Syene, and where the shadow both way falls,
> Meroe, Nilotic isle, and more to West,
> The realms of Bocchus to the Blackmoor sea;
> From th' Asian kings, and Parthian among these;

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solute necessity, and immense benefits of slavery, finds it necessary to add, I suppose, in deference to the general sentiment of his countrymen, "that slavery might have done all this, seems not more plain, than that so much good would have been bought too dear, if its price had been slavery." Well may we say that the word makes men mad.

* Johnson on Change of Air.

From India and the golden Chersonese,
And utmost India's isle, Taprobona,
Dusk faces, with white silken turbans wreathed;
From Gallia, Gades and the British West;
Germans and Scythians, and Sarmartians, North
Beyond Danubius to the Tauric Pool!
All nations now to Rome obedience pay."

Such was and such is the picture of Italy. Greece presents a contrast not less striking. What is the cause of the great change? Many causes, no doubt, have occurred; but though

"War, famine, pestilence and flood and fire
Have dealt upon the seven-hilled city's pride,"

I will venture to say that nothing has dealt upon it more heavily than the loss of domestic slavery. Is not this evident? If they had slaves, with an energetic civil government, would the deadly miasma be permitted to overspread the Campagna and invade Rome herself? Would not the soil be cultivated, and the wastes reclaimed? A late traveller* mentions a canal, cut for miles through rock and mountain, for the purpose of carrying off the waters of the lake of Celeno, on which thirty thousand Roman slaves were employed for eleven years, and which remains almost perfect to the present day. This, the government of Naples was ten years in repairing with an hundred workmen. The imperishable works of Rome which remain to the present day were, for the most part, executed by slaves. How different would be the condition of Naples, if for her wretched lazaroni were substituted negro slaves, employed in rendering productive the plains whose fertility now serves only to infect the air!

To us, on whom this institution is fastened, and who could not shake it off, even if we desired to do so, the great republics of antiquity offer instruction of inestimable value. They teach us that slavery is compatible with the freedom, stability and long duration of civil government, with denseness of population, great power, and the highest civilization. And in what respect does this modern Europe, which claims to give opinions to the world, so far excel them—notwithstanding the immense advantages of the Christian religion and the discovery of the art of printing? They are not more free, nor have performed more glorious actions, nor displayed more exalted virtue. In the higher department of intellect—in all that relates to taste and imagination—they will hardly venture to claim equality. Where they have gone beyond them in the results of mechanical philosophy, or discoveries which contribute to the wants and enjoyments of physical life, they have done so by the help of means with which they were furnished by the Grecian mind—the mother of civilization—and only pursued a little farther the track which that had always pointed out. In the development of intellectual power,

* Eight days in the Abruzzi.—*Blackwood's Magazine, November*, 1835.

they will hardly bear comparison. Those noble republics, in the pride of their strength and greatness, may have anticipated for themselves—as some of their poets did for them—an everlasting duration and predominance. But they could not have anticipated, that when they had fallen under barbarous arms, that when arts and civilization were lost, and the whole earth in darkness—the first light should break from their tombs—that in a renewed world, unconnected with them by ties of locality, language or descent, they should still be held the models of all that is profound in science, or elegant in literature, or all that is great in character, or elevated in imagination. And perhaps when England herself, who now leads the war with which we are on all sides threatened, shall have fulfilled their mission, and like the other glorious things of the earth, shall have passed away; when she shall have diffused her noble race and noble language, her laws, her literature and her civilization, over all quarters of the earth, and shall perhaps be overrun by some Northern horde—sunk into an ignoble and anarchical democracy,* or subdued to the dominion of some Cæsar,—demagogue and despot,—there, in Southern regions, there may be found many republics, triumphing in Grecian arts and civilization, and worthy of British descent and Roman institutions.

If after a time, when the mind and almost the memory of the republic were lost, Romans degenerated, they furnish conclusive evidence that this was owing not to their domestic, but to their political slavery. The same thing is observed over all the eastern monarchies; and so it must be, wherever property is insecure, and it is dangerous for a man to raise himself to such eminence by intellectual or moral excellence, as would give him influence over his society. So it is in Egypt and the other regions bordering the Mediterranean, which once comprehended the civilization of the world, where Carthage, Tyre and Phœnicia flourished. In short, the uncontradicted experience of the world is, that in Southern States where good government and prædial and domestic slavery are found, there are prosperity and greatness; where either of these conditions is wanting, degeneracy and barbarism. The former, however, is equally essential in all climates and under all institutions. And can we suppose it to be the design of the Creator, that these regions, constituting half of the earth's surface, and the more fertile half and more capable of sustaining life, should be abandoned forever to depopulation and barbarism? Certain it is, that they will never be reclaimed by the labor of freemen. In our own country, look at the lower valley of the Mississippi, which is capable of being made a far greater Egypt. In our own state, there are extensive tracts of the most fertile soil, which are capable of being made to swarm with life. These are at present pestilential swamps, and valueless, because there is abundance of other fertile soil in more favorable situations, which demand all and more than

* I do not use the word democracy in the Athenian sense, but to describe the government in which the slave and his master have an equal voice in public affairs.

all the labor which our country can supply. Are these regions of fertility to be abandoned at once and forever to the alligator and tortoise—with here and there perhaps a miserable, shivering, crouching *free* black savage? Does not the finger of heaven itself seem to point to a race of men—not to be enslaved by us, but already enslaved, and who will be in every way benefited by the change of masters—to whom such climate is not uncongenial, who though disposed to indolence, are yet patient and capable of labor; on whose whole features, mind and character, nature has indelibly written—slave;—and indicate that we should avail ourselves of these in fulfilling the first great command, to subdue and replenish the earth.

It is true that this labor will be dearer than that of northern countries, where, under the name of freedom, they obtain cheaper and perhaps better slaves. Yet it is the best we can have, and this too has its compensation. We see it compensated at present by the superior value of our agricultural products. And this superior value they must probably always have. The Southern climate admits of a greater variety of productions. Whatever is produced in Northern climates, the same thing, or something equivalent, may be produced in the Southern. But the Northern have no equivalent for the products of Southern climates. The consequence will be, that the products of Southern regions will be demanded all over the civilized world. The agricultural products of Northern regions are chiefly for their own consumption. They must therefore apply themselves to the manufacturing of articles of luxury, elegance, convenience or necessity,—which requires cheap labor,—for the purpose of exchanging them with their Southern neighbors. Thus nature herself indicates that agriculture should be the predominating employment in Southern countries, and manufactures in Northern. Commerce is necessary to both—but less indispensable to the Southern, which produce within themselves a greater variety of things desirable to life. They will therefore have somewhat less of the commercial spirit. We must avail ourselves of such labor as we can command. The slave must labor, and is inured to it; while the necessity of energy in his government, of watchfulness, and of preparation and power to suppress insurrection, added to the moral force derived from the habit of command, may help to prevent the degeneracy of the master.

The task of keeping down insurrection is commonly supposed, by those who are strangers to our institution, to be a very formidable one. Even among ourselves, accustomed as we have been to take our opinions on this as on every other subject, ready formed from those whom we regarded as instructors, in the teeth of our own observation and experience, fears have been entertained which are absolutely ludicrous. We have been supposed to be nightly reposing over a mine, which may at any instant explode to our destruction. The first thought of a foreigner sojourning in one of our cities, who is awakened by any nightly alarm, is of servile insurrection and massacre. Yet if any thing is certain in human affairs, it is certain and from the most obvious considerations, that we are more secure in this respect than any civilized and fully-peopled society upon the face of

the earth. In every such society, there is a much larger proportion than with us, of persons who have more to gain than to lose by the overthrow of government, and the embroiling of social order. It is in such a state of things that those who were before at the bottom of society, rise to the surface. From causes already considered, they are peculiarly apt to consider their sufferings the result of injustice and misgovernment, and to be rancorous and embittered accordingly. They have every excitement therefore of resentful passion, and every temptation which the hope of increased opulence, or power or consideration can hold out, to urge them to innovation and revolt. Supposing the same disposition to exist in equal degree among our slaves, what are their comparative means or prospect of gratifying it? The poor of other countries are called free. They have, at least, no one interested to exercise a daily and nightly superintendence and control over their conduct and actions. Emissaries of their class may traverse, unchecked, every portion of the country, for the purpose of organizing insurrection. From their greater intelligence, they have greater means of communicating with each other. They may procure and secrete arms. It is not alone the ignorant, or those who are commonly called the poor, that will be tempted to revolution. There will be many disappointed men, and men of desperate fortune—men perhaps of talent and daring—to combine them and direct their energies. Even those in the higher ranks of society who contemplate no such result, will contribute to it, by declaiming on their hardships and rights.

With us, it is almost physically impossible, that there should be any very extensive combination among the slaves. It is absolutely impossible that they should procure and conceal efficient arms. Their emissaries traversing the country, would carry their commission on their foreheads. If we suppose among them an individual of sufficient talent and energy to qualify him for a revolutionary leader, he could not be so extensively known as to command the confidence, which would be necessary to enable him to combine and direct them. Of the class of freemen, there would be no individual so poor or degraded (with the exception perhaps of here and there a reckless and desperate outlaw and felon) who would not have much to lose by the success of such an attempt; every one therefore would be vigilant and active to detect and suppress it. Of all impossible things, one of the most impossible would be a successful insurrection of our slaves, originating with themselves.

Attempts at insurrection have indeed been made—excited, as we believe, by the agitation of the abolitionists and declaimers on slavery; but these have been in every instance promptly suppressed. We fear not to compare the riots, disorder, revolt and bloodshed which have been committed in our own, with those of any other civilized communities, during the same lapse of time. And let it be observed under what extraordinary circumstances our peace has been preserved. For the last half century, one half of our population has been admonished in terms the most calculated to madden and excite, that they are the victims of the most grinding and cruel injustice and oppression. We know that these exhortations continually reach them,

through a thousand channels which we cannot detect, as if carried by the birds of the air—and what human being, especially when unfavorably distinguished by outward circumstances, is not ready to give credit when he is told that he is the victim of injustice and oppression? In effect if not in terms, they have been continually exhorted to insurrection. The master has been painted a criminal, tyrant and robber, justly obnoxious to the vengeance of God and man, and they have been assured of the countenance and sympathy, if not of the active assistance of all the rest of the world. We ourselves have in some measure pleaded guilty to the impeachment. It is not long since a great majority of our free population, servile to the opinions of those whose opinions they had been accustomed to follow, would have admitted slavery to be a great evil, unjust and indefensible in principle, and only to be vindicated by the stern necessity which was imposed upon us. Thus stimulated by every motive and passion which ordinarily actuate human beings—not as to a criminal enterprize, but as to something generous and heroic—what has been the result? A few imbecile and uncombined plots—in every instance detected before they broke out into action, and which, perhaps, if undetected, would never have broken into action; one or two sudden, unpremeditated attempts, frantic in their character, if not prompted by actual insanity, and these instantly crushed. As it is, we are not less assured of safety, order and internal peace than any other people; and but for the pertinacious and fanatical agitation of the subject, would be much more so.

This experience of security, however, should admonish us of the folly and wickedness of those who have sometimes taken upon themselves to supersede the regular course of law, and by rash and violent acts to punish supposed disturbers of the peace of society. This can admit of no justification or palliation whatever. Burke, I think, somewhere remarks something to this effect,—that when society is in the last stage of depravity—when all parties are alike corrupt and alike wicked and unjustifiable in their measures and objects, a good man may content himself with standing neuter, a sad and disheartened spectator of the conflict between the rival vices. But are we in this wretched condition? It is fearful to see with what avidity the worst and most dangerous characters of society seized on the occasion of obtaining the countenance of better men, for the purpose of throwing off the restraints of law. It is always these who are most zealous and forward in constituting themselves the protectors of the public peace. To such men—men without reputation or principle or stake in society—disorder is the natural element. In that, desperate fortunes and the want of all moral principle and moral feeling constitute power. They are eager to avenge themselves upon society. Anarchy is not so much the absence of government as the government of the worst—not aristocracy but kakistocracy—a state of things which, to the honor of our nature, has seldom obtained amongst them, and which perhaps was only fully exemplified during the worst times of the French revolution, when that horrid hell burnt with its most lurid flame. In such a state of things, to be accused is to be condemned—to protect

the innocent is to be guilty; and what perhaps is the worst effect, even men of better nature, to whom their own deeds are abhorrent, are goaded by terror to be forward and emulous in deeds of guilt and violence. The scenes of lawless violence which have been acted in some portions of our country, rare and restricted as they have been, have done more to tarnish its reputation than a thousand libels. They have done more to discredit, and if any thing could, to endanger, not only our domestic, but our republican institutions, than the abolitionists themselves. Men can never be permanently and effectually disgraced but by themselves, and rarely endangered but by their own injudicious conduct, giving advantage to the enemy. Better, far better, would it be to encounter the dangers with which we are supposed to be threatened, than to employ such means for averting them. But the truth is, that in relation to this matter, so far as respects actual insurrection, when alarm is once excited, danger is absolutely at an end. Society can then employ legitimate and more effectual measures for its own protection. The very commission of such deeds, is proof that they are unnecessary. Let those who attempt them then, or make any demonstration towards them, understand that they will meet only the discountenance and abhorrence of all good men, and the just punishment of the laws they have dared to outrage.

It has commonly been supposed, that this institution will prove a source of weakness in relation to military defence against a foreign enemy. I will venture to say, that in a slave-holding community, a larger military force may be maintained permanently in the field, than in any state where there are not slaves. It is plain that almost the whole of the able-bodied free male population, making half of the entire able-bodied male population, may be maintained in the field, and this without taking in any material degree from the labor and resources of the country. In general the labor of our country is performed by slaves. In other countries, it is their laborers that form the material of their armies. What proportion of these can be taken away without fatally crippling their industry and resources? In the war of the revolution, though the strength of our state was wasted and paralyzed by the unfortunate divisions which existed among ourselves, yet it may be said with general truth, that every citizen was in the field, and acquired much of the qualities of the soldier.

It is true that this advantage will be attended with its compensating evils and disadvantages; to which we must learn to submit, if we are determined on the maintenance of our institutions. We are, as yet, hardly at all aware how little the maxims and practices of modern civilized governments will apply to us. Standing armies, as they are elsewhere constituted, we cannot have; for we have not, and for generations cannot have, the materials out of which they are to be formed. If we should be involved in serious wars, I have no doubt but that some sort of conscription, requiring the services of all citizens for a considerable term, will be necessary. Like the people of Athens, it will be necessary that every citizen should be a soldier, and qualified to discharge efficiently the duties of a soldier. It may seem a melancholy consideration, that an army so made up should be op-

posed to the disciplined mercenaries of foreign nations. But we must learn to know our true situation. But may we not hope, that made up of superior materials, of men having home and country to defend; inspired by higher pride of character, of greater intelligence, and trained by an effective, though honorable discipline, such an army will be more than a match for mercenaries? The efficiency of an army is determined by the qualities of its officers; and may we not expect to have a greater proportion of men better qualified for officers, and possessing the true spirit of military command? And let it be recollected, that if there were otherwise reason to apprehend danger from insurrection, there will be the greatest security when there is the largest force on foot within the country. Then it is that any such attempt would be most instantly and effectually crushed.

And perhaps a wise foresight should induce our state to provide, that it should have within itself such military knowledge and skill as may be sufficient to organize, discipline and command armies, by establishing a military academy or school of discipline. The school of the militia will not do for this. From the general opinion of our weakness, if our country should at any time come into hostile collision, we shall be selected for the point of attack; making us, according to Mr. Adams' anticipation, the Flanders of the United States. Come from what quarter it may, the storm will fall upon us. It is known that lately, when there was apprehension of hostility with France, the scheme was instantly devised of invading the Southern States and organizing insurrection. In a popular English periodical work, I have seen the plan suggested by an officer of high rank and reputation in the British army, of invading the Southern States at various points and operating by the same means. He is said to be a gallant officer, and certainly had no conception that he was devising atrocious crime, as alien to the true spirit of civilized warfare, as the poisoning of streams and fountains. But the folly of such schemes is no less evident than their wickedness. Apart from the consideration of that which experience has most fully proved to be true—that in general their attachment and fidelity to their masters is not to be shaken, and that from sympathy with the feelings of those by whom they are surrounded, and from whom they derive their impressions, they contract no less terror and aversion towards an invading enemy; it is manifest that this recourse would be an hundred fold more available to us than to such an enemy. They are already in our possession, and we might at will arm and organize them in any number that we might think proper. The Helots were a regular constituent part of the Spartan armies. Thoroughly acquainted with their characters and accustomed to command them, we might use any strictness of discipline which would be necessary to render them effective, and from their habits of subordination already formed, this would be a task of less difficulty. Though morally most timid, they are by no means wanting in physical strength of nerve. They are excitable by praise; and directed by those in whom they have confidence, would rush fearlessly and unquestioning upon any sort of danger. With white officers and accompanied by a strong white cavalry, there are

no troops in the world from whom there would be so little reason to apprehend insubordination or mutiny.

This I admit might be a dangerous resource, and one not to be resorted to but in great extremity. But I am supposing the case of our being driven to extremity. It might be dangerous to disband such an army, and reduce them, with the habits of soldiers, to their former condition of laborers. It might be found necessary, when once embodied, to keep them so, and subject to military discipline—a permanent standing army. This in time of peace would be expensive, if not dangerous. Or, if at any time we should be engaged in hostilities with our neighbors, and it were thought advisable to send such an army abroad to conquer settlements for themselves, the invaded regions might have occasion to think that the scourge of God was again let loose to afflict the earth.

President Dew has very fully shown how utterly vain are the fears of those, who though there may be no danger for the present, yet apprehend great danger for the future, when the number of slaves shall be greatly increased. He has shown that the larger and more condensed the society becomes, the easier it will be to maintain subordination, supposing the relative numbers of the different classes to remain the same—or even if there should be a very disproportionate increase of the enslaved class. Of all vain things, the vainest and that in which man most shows his impotence and folly, is the taking upon himself to provide for a very distant future—at all events, by any material sacrifice of the present. Though experience has shown that revolutions and political movements—unless when they have been conducted with the most guarded caution and moderation—have generally terminated in results just the opposite of what was expected from them, the angry ape will still play his fantastic tricks, and put in motion machinery, the action of which he no more comprehends or foresees than he comprehends the mysteries of infinity. The insect that is borne upon the current, will fancy that he directs its course. Besides the fear of insurrection and servile war, there is also alarm lest when their numbers shall be greatly increased, their labor will become utterly unprofitable, so that it will be equally difficult for the master to retain and support them, or to get rid of them. But at what age of the world is this likely to happen? At present, it may be said that almost the whole of the Southern portion of this continent is to be subdued to cultivation; and in the order of providence, this is the task allotted to them. For this purpose, more labor will be required for generations to come than they will be able to supply. When that task is accomplished, there will be many objects to which their labor may be directed.

At present they are employed in accumulating individual wealth, and this in one way, to wit, as agricultural laborers—and this is perhaps the most useful purpose to which their labor can be applied. The effect of slavery has not been to counteract the tendency to dispersion, which seems epidemical among our countrymen, invited by the unbounded extent of fertile and unexhausted soil, though it counteracts many of the evils of dispersion. All the customary

trades, professions and employments, except the agricultural, require a condensed population for their profitable exercise. The agriculturist who can command no labor but that of his own hands or that of his family, must remain comparatively poor and rude. He who acquires wealth by the labor of slaves, has the means of improvement for himself and his children. He may have a more extended intercourse, and consequently means of information and refinement, and may seek education for his children where it may be found. I say, what is obviously true, that he has the *means* of obtaining those advantages; but I say nothing to palliate or excuse the conduct of him who, having such means, neglects to avail himself of them.

I believe it to be true, that in consequence of our dispersion, though individual wealth is acquired, the face of the country is less adorned and improved by useful and ornamental public works, than in other societies of more condensed population, where there is less wealth. But this is an effect of that, which constitutes perhaps our most conspicuous advantage. Where population is condensed, they must have the evils of condensed population, and among these is the difficulty of finding profitable employment for capital. He who has accumulated even an inconsiderable sum, is often puzzled to know what use to make of it. Ingenuity is therefore tasked to cast about for every enterprise which may afford a chance of profitable investment. Works useful and ornamental to the country, are thus undertaken and accomplished, and though the proprietors may fail of profit, the community no less receives the benefit. Among us, there is no such difficulty. A sale and profitable method of investment is offered to every one who has capital to dispose of, which is further recommended to his feelings by the sense of independence and the comparative leisure which the employment affords to the proprietor engaged in it. It is for this reason that few of our citizens engage in the pursuits of commerce. Though these may be more profitable, they are also more hazardous and more laborious.

When the demand for agricultural labor shall be fully supplied, then of course the labor of slaves will be directed to other employments and enterprises. Already it begins to be found, that in some instances it may be used as profitably in works of public improvement. As it becomes cheaper and cheaper, it will be applied to more various purposes and combined in larger masses. It may be commanded and combined with more facility than any other sort of labor; and the laborer, kept in stricter subordination, will be less dangerous to the security of society than in any other country, which is crowded and overstocked with a class of what are called free laborers. Let it be remembered, that all the great and enduring monuments of human art and industry—the wonders of Egypt—the everlasting works of Rome—were created by the labor of slaves. There will come a stage in our progress when we shall have facilities for executing works as great as any of these—more useful than the pyramids—not less magnificent than the sea of Moeris. What the end of all is to be; what mutations lie hid in the womb of the distant future; to what convulsions our societies may be exposed—whether the

master, finding it impossible to live with his slaves, may not be compelled to abandon the country to them—of all this it were presumptuous and vain to speculate.

I have hitherto, as I proposed, considered it as a naked, abstract question of the comparative good and evil of the institution of slavery. Very far different indeed is the practical question presented to us, when it is proposed to get rid of an institution which has interwoven itself with every fibre of the body politic; which has formed the habits of our society, and is consecrated by the usage of generations. If this be not a vicious prescription, which the laws of God forbid to ripen into right, it has a just claim to be respected by all tribunals of man. If the negroes were now free, and it were proposed to enslave them, then it would be incumbent on those who proposed the measure, to show clearly that their liberty was incompatible with the public security. When it is proposed to innovate on the established state of things, the burthen is on those who proposed the innovation, to show that advantage will be gained from it. There is no reform, however necessary, wholesome or moderate, which will not be accompanied with some degree of inconvenience, risk or suffering. Those who acquiesce in the state of things which they found existing, can hardly be thought criminal. But most deeply criminal are they who give rise to the enormous evil with which great revolutions in society are always attended, without the fullest assurance of the greater good to be ultimately obtained. But if it can be made to appear, even probably, that no good will be obtained, but that the results will be evil and calamitous as the process, what can justify such innovations? No human being can be so mischievous—if acting conscientiously, none can be so wicked, as those who, finding evil in existing institutions, rush blindly upon change, unforeseeing and reckless of consequences, and leaving it to chance or fate to determine whether the end shall be improvement, or greater and more intolerable evil. Certainly the instincts of nature prompt to resist intolerable oppression. For this resistance no rule can be prescribed, but it must be left to the instincts of nature. To justify it, however, the insurrectionists should at least have a reasonable probability of success, and be assured that their condition will be improved by success. But most extraordinary is it, when those who complain and clamor, are not those who are supposed to feel the oppression, but persons at a distance from them, and who can hardly at all appreciate the good or evil of their situation. It is the unalterable condition of humanity, that men must achieve civil liberty for themselves. The assistance of allies has sometimes enabled nations to repel the attacks of foreign power; never to conquer liberty as against their own internal government.

In one thing I concur with the abolitionists: that if emancipation is to be brought about, it is better that it should be immediate and total. But let us suppose it to be brought about in any manner, and then inquire what would be the effects.

The first and most obvious effect, would be to put an end to the cultivation of our great southern staple. And this would be equally

the result, if we suppose the emancipated negroes to be in no way distinguished from the free laborers of other countries, and that their labor would be equally effective. In that case, they would soon cease to be laborers for hire, but would scatter themselves over our unbounded territory, to become independent land-owners themselves. The cultivation of the soil on an extensive scale, can only be carried on where there are slaves, or in countries superabounding with free labor. No such operations are carried on in any portions of our own country where there are not slaves. Such are carried on in England, where there is an overflowing population and intense competition for employment. And our institutions seem suited to the exigencies of our respective situations. There, a much greater number of laborers is required at one season of the year than at another, and the farmer may enlarge or diminish the quantity of labor he employs, as circumstances may require. Here, about the same quantity of labor is required at every season, and the planter suffers no inconvenience from retaining his laborers throughout the year. Imagine an extensive rice or cotton plantation cultivated by free laborers, who might perhaps *strike* for an increase of wages, at a season when the neglect of a few days would insure the destruction of the whole crop: even if it were possible to procure laborers at all, what planter would venture to carry on his operations under such circumstances? I need hardly say, that these staples cannot be produced to any extent where the proprietor of the soil cultivates it with his own hands. He can do little more than produce the necessary food for himself and his family.

And what would be the effect of putting an end to the cultivation of these staples, and thus annihilating at a blow, two-thirds, or three-fourths of our foreign commerce? Can any sane mind contemplate such a result without terror? I speak not of the utter poverty and misery to which we ourselves would be reduced, and the desolation which would overspread our own portion of the country. Our slavery has not only given existence to millions of slaves within our own territories, it has given the means of subsistence, and therefore existence to millions of freemen in our confederate states; enabling them to send forth their swarms, to overspread the plains and forests of the West, and appear as the harbingers of civilization. The products of the industry of those states are in general similar to those of the civilized world, and are little demanded in their markets. By exchanging them for ours, which are every where sought for, the people of these states are enabled to acquire all the products of art and industry, all that contributes to convenience or luxury, or gratifies the taste or the intellect, which the rest of the world can supply. Not only on our own continent, but on the other, it has given existence to hundreds of thousands, and the means of comfortable subsistence to millions. A distinguished citizen of our own state, than whom none can be better qualified to form an opinion, has lately stated that our great staple, cotton, has contributed more than any thing else of later times to the progress of civilization. By enabling the poor to obtain cheap and becoming clothing, it has inspired a taste for comfort, the

first stimulus to civilization. Does not *self-defence* then demand of us, steadily to resist the abrogation of that which is productive of so much good? It is more than self-defence. It is to defend millions of human beings, who are far removed from us, from the intensest suffering, if not from being struck out of existence. It is the defence of human civilization.

But this is but a small part of the evil which would be occasioned. After President Dew, it is unnecessary to say a single word on the practicability of colonizing our slaves. The two races, so widely separated from each other by the impress of nature, must remain together in the same country. Whether it be accounted the result of prejudice or reason, it is certain that the two races will not be blended together so as to form a homogeneous population. To one who knows any thing of the nature of man and human society, it would be unnecessary to argue that this state of things cannot continue; but that the one race must be driven out by the other, or exterminated, or again enslaved. I have argued on the supposition that the emancipated negroes would be as efficient as other free laborers. But whatever theorists, who know nothing of the matter, may think proper to assume, we well know that this would not be so. We know that nothing but the coercion of slavery can overcome their propensity to indolence, and that not one in ten would be an efficient laborer. Even if this disposition were not grounded in their nature, it would be a result of their position. I have somewhere seen it observed, that to be degraded by opinion, is a thousand fold worse, so far as the feelings of the individual are concerned, than to be degraded by the laws. *They* would be thus degraded, and this feeling is incompatible with habits of order and industry. Half our population would at once be paupers. Let an inhabitant of New-York or Philadelphia conceive of the situation of their respective states, if one half of their population consisted of free negroes. The tie which now connects them being broken, the different races would be estranged from each other, and hostility would grow up between them. Having the command of their own time and actions, they could more effectually combine insurrection and provide the means of rendering it formidable. Released from the vigilant superintendence which now restrains them, they would infallibly be led from petty to greater crimes, until all life and property would be rendered insecure. Aggression would beget retaliation, until open war, and that a war of extermination, were established. From the still remaining superiority of the white race, it is probable that they would be the victors, and if they did not exterminate, they must again reduce the others to slavery—when they could be no longer fit to be either slaves or freemen. It is not only in self-defence, in defence of our country and of all that is dear to us, but in defence of the slaves themselves, that we refuse to emancipate them.

If we suppose them to have political privileges, and to be admitted to the elective franchise, still worse results may be expected. It is hardly necessary to add any thing to what has been said by Mr. Paulding on this subject, who has treated it fully. It is already known, that

if there be a class unfavorably distinguished by any peculiarity from the rest of society, this distinction forms a tie which binds them to act in concert, and they exercise more than their due share of political power and influence—and still more, as they are of inferior character and looser moral principle. Such a class form the very material for demagogues to work with. Other parties court them and concede to them. So it would be with the free blacks in the case supposed. They would be used by unprincipled politicians, of irregular ambition, for the advancement of their schemes, until they should give them political power and importance beyond even their own intentions. They would be courted by excited parties in their contests with each other. At some time, they may perhaps attain political ascendency, and this is more probable, as we may suppose that there will have been a great emigration of whites from the country. Imagine the government of such legislators. Imagine then the sort of laws that will be passed, to confound the invidious distinction which has so long been assumed over them, and if possible to obliterate the very memory of it. These will be resisted. The blacks will be tempted to avenge themselves by oppression and proscription of the white race, for their long superiority. Thus matters will go on, until universal anarchy, or kakistocracy, the government of the worst, is fully established. I am persuaded that if the spirit of evil should devise to send abroad upon the earth all possible misery, discord, horror and atrocity, he could contrive no scheme so effectual as the emancipation of negro slaves within our country.

The most feasible scheme of emancipation, and that which I verily believe would involve the least danger and sacrifice, would be that the *entire* white population should emigrate, and abandon the country to their slaves. Here would be triumph to philanthropy. This wide and fertile region would be again restored to ancient barbarism—to the worst of all barbarism—barbarism corrupted and depraved by intercourse with civilization. And this is the consummation to be wished, upon a *speculation*, that in some distant future age, they may become so enlightened and improved, as to be capable of sustaining a position among the civilized races of the earth. But I believe moralists allow men to defend their homes and their country, even at the expense of the lives and liberties of others.

Will any philanthropist say that the evils, of which I have spoken, would be brought about only by the obduracy, prejudices and overweaning self-estimation of the whites in refusing to blend the races by marriage, and so create an homogeneous population? But what if it be not prejudice, but truth, and nature, and right reason, and just moral feeling? As I have before said, throughout the whole of nature, like attracts like, and that which is unlike repels. What is it that makes so unspeakably loathsome, crimes not to be named, and hardly alluded to? Even among the nations of Europe, so nearly homogeneous, there are some peculiarities of form and feature, mind and character, which may be generally distinguished by those accustomed to observe them. Though the exceptions are numerous, I will venture to say that not in one instance in a hundred, is the man of sound and

unsophisticated tastes and propensities so likely to be attracted by the female of a foreign stock, as by one of his own, who is more nearly conformed to himself. Shakspeare spoke the language of nature, when he made the senate and people of Venice attribute to the effect of witchcraft, Desdemona's passion for Othello—though, as Coleridge has said, we are to conceive of him not as a negro, but as a high bred Moorish Chief.

If the negro race, as I have contended, be inferior to our own in mind and character, marked by inferiority of form and features, then ours would suffer deterioration from such intermixture. What would be thought of the moral conduct of the parent who should voluntarily transmit disease, or fatuity, or deformity to his offspring? If man be the most perfect work of the Creator, and the civilized European man the most perfect variety of the human race, is he not criminal who would desecrate and deface God's fairest work; estranging it further from the image of himself, and conforming it more nearly to that of the brute. I have heard it said, as if it afforded an argument, that the African is as well satisfied of the superiority of his own complexion, form and features, as we can be of ours. If this were true, as it is not, would any one be so recreant to his own civilization, as to say that his opinion ought to weigh against ours—that there is no universal standard of truth and grace and beauty—that the Hottentot Venus may perchance possess as great perfection of form as the Medicean? It is true, the licentious passions of men overcome the natural repugnance, and find transient gratification in intercourse with females of the other race. But this is a very different thing from making her the associate of life, the companion of the bosom and the hearth. Him who would contemplate such an alliance for himself, or regard it with patience, when proposed for a son, or daughter, or sister, we should esteem a degraded wretch—with justice, certainly, if he were found among ourselves—and the estimate would not be very different if he were found in Europe. It is not only in defence of ourselves, of our country, and of our own generation, that we refuse to emancipate our slaves, but to defend our posterity and race from degeneracy and degradation.

Are we not justified then in regarding as criminals, the fanatical agitators whose efforts are intended to bring about the evils I have described? It is sometimes said that their zeal is generous and disinterested, and that their motives may be praised, though their conduct be condemned. But I have little faith in the good motives of those who pursue bad ends. It is not for us to scrutinize the hearts of men, and we can only judge of them by the tendency of their actions. There is much truth in what was said by Coleridge. "I have never known a trader in philanthropy who was not wrong in heart somehow or other. Individuals so distinguished, are usually unhappy in their family relations—men not benevolent or beneficent to individuals, but almost hostile to them, yet lavishing money and labor and time on the race—the abstract notion." The prurient love of notoriety actuates some. There is much luxury in sentiment, especially if it can be indulged at the expense of others; and if there be added some

share of envy or malignity, the temptation to indulgence is almost irresistible. But certainly they may be justly regarded as criminal, who obstinately shut their eyes and close their ears to all instruction with respect to the true nature of their actions.

It must be manifest to every man of sane mind that it is impossible for them to achieve ultimate success; even if every individual in our country, out of the limits of the slave-holding states, were united in their purposes. They cannot have even the miserable triumph of St. Domingo—of advancing through scenes of atrocity, blood and massacre to the restoration of barbarism. They may agitate and perplex the world for a time. They may excite to desperate attempts and particular acts of cruelty and horror, but these will always be suppressed or avenged at the expense of the objects of their truculent philanthropy. But short of this, they can hardly be aware of the extent of the mischief they perpetrate. As I have said, their opinions, by means to us inscrutable, do very generally reach our slave population. What human being, if unfavorably distinguished by outward circumstances, is not ready to believe when he is told that he is the victim of injustice? Is it not cruelty to make men restless and dissatisfied in their condition, when no effort of theirs can alter it? The greatest injury is done to their characters, as well as to their happiness. Even if no such feelings or designs should be entertained or conceived by the slave, they will be attributed to him by the master, and all his conduct scanned with a severe and jealous scrutiny. Thus distrust and aversion are established, where, but for mischievous interference, there would be confidence and good will, and a sterner control is exercised over the slave who thus becomes the victim of his cruel advocates.

An effect is sometimes produced on the minds of slave holders, by the publications of the self-styled philanthropists, and their judgments staggered and consciences alarmed. It is natural that the oppressed should hate the oppressor. It is still more natural that the oppressor should hate his victim. Convince the master that he is doing injustice to his slave, and he at once begins to regard him with distrust and malignity. It is a part of the constitution of the human mind, that when circumstances of necessity or temptation induce men to continue in the practice of what they believe to be wrong, they become desperate and reckless of the degree of wrong. I have formerly heard of a master who accounted for his practising much severity upon his slaves, and exacting from them an unusual degree of labor, by saying that the thing (slavery) was altogether wrong, and therefore it was well to make the greatest possible advantage out of it. This agitation occasions some slave holders to hang more loosely on their country. Regarding the institution as of questionable character, condemned by the general opinion of the world, and one which must shortly come to an end, they hold themselves in readiness to make their escape from the evil which they anticipate. Some sell their slaves to new masters (always a misfortune to the slave,) and remove themselves to other societies, of manners and habits, uncongenial to their own. And though we may suppose

that it is only the weak and the timid who are liable to be thus affected, still it is no less an injury and public misfortune. Society is kept in an unquiet and restless state, and every sort of improvement is retarded.

Some projectors suggest the education of slaves, with a view to prepare them for freedom—as if they were any method of a man's being educated to freedom, but by himself. The truth is, however, that supposing that they are shortly to be emancipated, and that they have the capacities of any other race, they are undergoing the very best education which it is possible to give. They are in the course of being taught habits of regular and patient industry, and this is the first lesson which is required. I suppose, that their most zealous advocates would not desire that they should be placed in the high places of society immediately upon their emancipation, but that they should begin their course of freedom as laborers, and raise themselves afterwards as their capacities and characters might enable them. But how little would what are commonly called the rudiments of education, add to their qualifications as laborers? But for the agitation which exists, however, their education would be carried further than this. There is a constant tendency in our society to extend the sphere of their employments, and consequently to give them the information which is necessary to the discharge of those employments. And this for the most obvious reason, it promotes the master's interest. How much would it add to the value of a slave, that he should be capable of being employed as a clerk, or be able to make calculations as a mechanic? In consequence, however, of the fanatical spirit which has been excited, it has been thought necessary to repress this tendency by legislation, and to prevent their acquiring the knowledge of which they might make a dangerous use. If this spirit were put down, and we restored to the consciousness of security, this would be no longer necessary, and the process of which I have spoken would be accelerated. Whenever indications of superior capacity appeared in a slave, it would be cultivated; gradual improvement would take place, until they might be engaged in as various employments as they were among the ancients—perhaps even liberal ones. Thus, if in the adorable providence of God, at a time and in a manner which we can neither foresee nor conjecture, they are to be rendered capable of freedom and to enjoy it, they would be prepared for it in the best and most effectual, because in the most natural and gradual manner. But fanaticism hurries to its effect at once. I have heard it said, God does good, but it is by imperceptible degrees; the devil is permitted to do evil, and he does it in a hurry. The beneficent processes of nature are not apparent to the senses. You cannot see the plant grow, or the flower expand. The volcano, the earthquake and the hurricane, do their work of desolation in a moment. Such would be the desolation, if the schemes of fanatics were permitted to have effect. They do all that in them lies to thwart the beneficent purposes of Providence. The whole tendency of their efforts is to aggravate present suffering, and to cut off the chance of future improvement, and in all their bearings and results, have produced, and are likely to produce, nothing but "pure, unmixed, dephlemated, defecated evil."

If Wilberforce or Clarkson were living, and it were inquired of them, "can you be sure that you have promoted the happiness of a single human being?" I imagine that, if they considered conscientiously, they would find it difficult to answer in the affirmative. If it were asked, "can you be sure that you have not been the cause of suffering, misery and death to thousands?"—when we recollect that they probably stimulated the exertions of the *amis des nois* in France, and that through the efforts of these, the horrors of St. Domingo were perpetrated—I think they must hesitate long to return a decided negative. It might seem cruel, if we could, to convince a man who has devoted his life to what he esteemed a good and generous purpose, that he has been doing only evil—that he has been worshipping a horrid fiend, in the place of the true God. But fanaticism is in no danger of being convinced. It is one of the mysteries of our nature, and of the divine government, how utterly disproportioned to each other are the powers of doing evil and of doing good. The poorest and most abject instrument, that is utterly imbecile for any purpose of good, seems sometimes endowed with almost the powers of Omnipotence for mischief. A mole may inundate a province—a spark from a forge may conflagrate a city—a whisper may separate friends—a rumor may convulse an empire: but when we would do benefit to our race or country, the purest and most chastened motives, the most patient thought and labor, with the humblest self-distrust, are hardly sufficient to assure us that the results may not disappoint our expectations, and that we may not do evil instead of good. But are we therefore to refrain from efforts to benefit our race and country? By no means: but these motives, this labor and self-distrust, are the only conditions upon which we are permitted to hope for success. Very different indeed is the course of those, whose precipitate and ignorant zeal would overturn the fundamental institutions of society, uproot its peace and endanger its security, in pursuit of a distant and shadowy good, of which they themselves have formed no definite conception—whose atrocious philosophy would sacrifice a generation—nd more than one generation—for any hypothesis.

ART. VII.—THE STATE OF GEORGIA.*

GEORGIA:—HER SITUATION, BOUNDARIES, SOIL, PRODUCTIONS, MINERALS, RESOURCES, &c., &c.

Dr. Johnson said, that when a nobleman appeared as an author, his merit should be handsomely acknowledged. Without subscribing to the justice of this sentiment, I will add, that when a Southerner appears as an author, his merit should be handsomely acknowledged. We are so much in need of authors, that when one appears above the dark horizon of our

* "Statistics of the State of Georgia, including an account of its Natural, Civil and Ecclesiastical History, together with a particular description of each county, notices of the manners and customs of its aboriginal tribes, and a correct map of the State. By George White. Savannah: W. Thorne Williams." 1849. 8vo. pp. 617.

benighted section, we should point with feelings of gratitude to the light of the star, almost solitary and alone, that beams upon the amplitude of darkness which surrounds us. This consideration will induce a mild treatment of Mr. White's case, when it might appear that justice would demand the use of the knife. The object of the present paper will be to show Georgia as she is, so far as it can be done by analysis of the book before us, with the help of a few other meagre materials which we have at our command, and to point out some of the defects of the volume which we are reviewing.

Georgia extends from the Blue Ridge Mountains, on the north, to the Okeefeenokee Swamp on the south, and from the Chattahochee river on the west, to the Savannah on the east. From South-Carolina, on the east, it is separated by a line running from the mouth of the Savannah river up that stream to the confluence of the Tugaloo and Keowee, and thence along the most northern branch of the Tugaloo until it intersects the northern boundaries of South-Carolina. From North-Carolina and Tennessee on the north, it is separated by a line commencing on a summit of the Blue Ridge, where the same is crossed by the 35th degree of north latitude, and terminating at Nickajack. From Alabama, on the west, it is separated by the Chattahochee, running from its southern boundary up to a position near West Point, and then by a line running thence directly to Nickajack. Several attempts have been made by commissioners to settle the line between Georgia and Florida on the south. All attempts at a definite settlement have, as yet, failed. This line, however, is somewhere near a direct course from the mouth of the Flint river to the source of the St. Mary's, thence along that stream to the point where it empties into the ocean.

Georgia is situated between 30° 21′ 39″ and 35° north latitude, and 81° and 84° 53′ 38″ west longitude from Greenwich, and 3° 46′ and 7° 39′ 26″ west longitude from Washington City.

Its length from north to south is	372 miles.
Its breadth from east to west is	256 "
Square miles	63,397½
Acres	40,574,400

"No State in the Union presents a richer field for the geologist than Georgia. With a territory embracing the southern extremity of the Great Atlantic chain of mountains, extending across them to the N. W. into the valley of the Mississippi, running to the S. W. into the cretaceous slope of the Gulf of Mexico, and occupying along its eastern boundary a wide belt of territory, it contains most of the important geological formations.

"Commencing at the Atlantic Ocean, and spreading out from 100 to 150 miles to the west, an extensive plain of a *tertiary formation* rises from the level of the sea, and gradually swells up to a height of about 500 feet, at a line passing near the head of navigation of the rivers Savannah, Ogeechee, Oconee and Ocmulgee, where it meets a primary formation. Between the Ocmulgee and Flint rivers it leaves the primary formation to the right, and rests on the cretaceous from a point nearly midway between Macon and Knoxville, by a line running in a S. W. direction to another point between Petanla Creek and Fort Gaines on the Chattahoochee river.

"Bounded by the last mentioned line to the S. E., and by the southern edge of the primary, as indicated by the heads of navigation in the Flint and Chattahoochee rivers, the *cretaceous* formation extends from Alabama into Georgia, forming an acute triangle. The *primary*, or non-fossiliferous, bounded on the east by the tertiary and cretaceous formations, as described above, crosses the state from N. E. to S. W., with a width of 160 miles at the northern limit, and 100 at the southern. The Blue Ridge range of mountains passes near its western edge, and forms the most elevated land of the state, varying in height from 1,200 to 4,000 feet. From this crest there is a gradual descent to the east, by a series of parallel and undulating ridges, until the tertiary plain is reached. On the west the descent is much more precipitous. The western boundary of the primary is not very accurately established, but is believed to lie not far from a line running nearly north and south through the centre of Gilmer county, and continued in the same direction to near Canton, in Cass county; thence to the western base of the Allatoona Mountain on the

Etowah river, where it turns to the S. W., and, passing near Van Wert, in Paulding county, and along the northern base of the Dugdown Mountain to the Alabama line.

"The north-west part of the State, bounded to the east and south by the western limit of the primary, consists of a *transition*, or older fossiliferous formation, except the extreme N. W. corner, where the *carboniferous* occurs." Pp. 14 and 15.

Georgia embraces every variety of soil, climate and productions. While the inhabitants of Southern and Middle Georgia are being parched with heat, frequently so intense as to prevent comfortable rest, even at night, the more northern climate, among the mountains, is such as to render necessary a blanket in order to comfortable repose by sleep. The sky is of a deep blue, and it is said by those who know, that a more lovely heaven does not smile upon the classic land of Italia than upon the highly favored inhabitants of Georgia. The light sandy soil of the cordon of islets which border the sea-coast of this State produces the fine and valuable description of cotton known as the "Sea Island." In the south are the tide swamp lands producing immense quantities of rice. The soil of these lands vary as they are situated upon the sea-shore, or upon larger or smaller rivers. On the Savannah they are very extensive, and are cultivated more than twenty miles from the brackish marsh up the river, and are considered the most valuable lands in the state. Next to these lands are those on the Altamaha river, which, in width, are equal to those of the Savannah. They do not extend from the marshes up more than sixteen miles. Beyond this, the freshets render them valueless, except for timber. Their soil has more of vegetable mould than the lands on the Savannah, and they are more easily cultivated. Their products are rice, black-seed cotton, Indian corn, and sugar-cane. Next come the tide lands of the Ogeechee, extending ten miles up from the marshes, which produce rice, but are not very well adapted to cotton. The tide lands of the great St. Illa are not as broad as the others, but are productive and fertile twenty miles up from the marshes, yielding good crops of rice and cotton. They are not so much liable to freshets as some others.

The inland swamp lands produce abundantly, but unless there be contiguous a reservoir of water, the produce is uncertain. Black-seed cotton is produced on the oak lands adjoining the inland swamps, though these lands are said to be of inferior quality. About sixty or seventy miles from the coast begin the pine lands, or, as they are sometimes called, "the pine barrens," which have heretofore been chiefly valuable for the immense quantity of timber which has been annually prepared for market. Within a short time past the attention of people has been turned to the manufacture of tar, pitch and turpentine, from the pines growing on these lands, and the time is at hand when these pine barrens will not afford the least source of wealth and prosperity to the citizens of Georgia. The middle region of the state contains land of a red, rich, loamy soil, producing tobacco, cotton, and all the grains. It was once very productive, but owing to the system of cultivation adopted by our planters who have raised upon it year after year, with scarce any intermission, large crops of cotton, it has become, in many counties, much impoverished. Large gullies, and red barren hill-sides, often greet the eye in places which were once as fertile as any under the sun. Our planters are becoming awake to the folly of their past course, and hill-side ditching, manuring, and a judicious rotation in crops, together with occasional rest to the land, is doing much to restore the soil to its virgin fertility. Much still remains to be accomplished, and he who will do most towards setting the example of improving our land, will be our greatest benefactor. We now have our yearly agricultural State Fair, which is doing a great deal to stimulate our planters to an honorable emulation in producing upon Georgia soil, in

the largest quantities, every thing needful to our peace, prosperity and happiness.

We cannot agree with our author in the assertion that the lands in the south-western part of the state, between the Chattahoochee and Flint rivers, "are of inexhaustible fertility." Our observation, which is confirmed by the assurance of many intelligent and respectable planters, teaches us, that although these lands when first cleared are very productive, they are not very durable. Being of a light, sandy soil, they produce fine crops of cotton, and sometimes sugar-cane, for a few years, and then become exhausted, when resort must be had to improvements to render them fertile again. These lands are cheaper in proportion to their fertility than any others in Georgia.

Let us turn now to the most interesting part of the state, known as Cherokee Georgia. This is in the north. The valleys here are exceedingly rich, producing wheat, corn, Irish potatoes, beans, peas, onions, &c. In some places cotton is extensively raised, but the crop is not so certain as in other parts of the state. This part of the territory of Georgia is peculiarly a grain country, so far as the valleys are concerned, while the mountains yield the more valuable minerals, gold, iron, marble, granite, limestone, &c. The land here is more costly than in any other part of the state, ranging from ten to thirty dollars per acre, while in south-western Georgia lands of equal fertility range from three to ten dollars per acre. The difference in the price is traceable to the fact that the lands of Cherokee Georgia are much more durable than those in the south-western part of the state—it being the fact, that in the former portion there is land which was cultivated by the Indian before the white man's axe ever echoed back from the hills the sound of the march of civilization, which now produces from fifty to seventy-five bushels per acre. Cherokee Georgia is not the place to raise cotton, but it is to be the granary and the workshop of the balance of the state. Its fields will produce corn to feed the operatives who are to direct its water-power in manufacturing the cotton which is raised in the more southern parts of the state, and in digging out from the bowels of the earth the minerals which are to regulate the inland commerce, and form the implements of husbandry, life and peace, and, in case of necessity, of war, death and destruction.

Mr. White says, "In the country bordering on the Savannah river, as far up as Elbert, and extending across to Broad river, the land, though long cultivated, is still productive; and we know of bodies of land in this section of the state, particularly in Oglethorpe county, which have been cultivated for more than half a century, and which still produce 700 and 800 pounds of cotton to the acre." P. 38.

Our author enumerates upwards of fifty streams in the state of Georgia which deserve and wear the name of rivers. A very cursory glance at the map of the state will show that her water resources are immense. The streams of this state alone, which pour the volume of their waters from the mountain springs into the bosom of the Atlantic and the Gulf, would supply sufficient power in eligible sites, to manufacture all the cotton grown in the world, or to grind all the grain produced in Uncle Sam's wide dominions. In addition to this, the Savannah, the Altamaha, the Oconee, the Ocmulgee, the St. Mary's, the Ogeechee, the Flint, the Chattahoochee, the Coosa, and various others, bear upon their bosoms steamboats, sloops, cotton, and flat-boats, laden with the productions of Georgia soil, and going to swell the tide of commerce upon which depend the wealth, power and prosperity of our nation.

Mr. White has in his book some interesting extracts from the MSS. of the late Col. Benjamin Hawkins, many years agent of the United States

Government in its transactions with the Creek Indians, formerly residing in this State. We give the following in reference to the origin of this tribe, as being most interesting:

"The origin of the name Creek is uncertain. The tradition is, that it was given by white people, from the number of creeks and water-courses in the country. The Indian name is Muscogee. The Creeks came from the West. They have a tradition among them that there is, in the Fork of the Red River, west of the Mississippi, two mounds of earth; that at this place the Cussetuhs, Conetuhs and Chickasaws found themselves; that being distressed by wars with red people, they crossed the Mississippi, and directing their course eastwardly, they crossed the falls of Tallapoosa above Tookaubatche, settled below the falls of Chattahoochee, and spread out from thence to Ocmulgee, Oconee, Savannah, and down on the sea-coast towards Charleston. Here they first saw white people, and from hence they have been compelled to retire back again to their present settlements."—P. 28.

"According to the census of 1840, the population of Georgia amounted to

210,634	white persons, males.
197,161	white persons, females.
1,374	free colored persons, males.
1,379	free colored persons, females.
139,335	slaves, males.
141,609	slaves, females.
Total.....	691,492*

"Of this number 574 are computed to be engaged in mining, 209,383 in agriculture, 2,428 in commerce, 7,984 in manufactures and trades, 262 in navigation of the seas, 352 in navigation of canals, lakes and rivers, 1,250 in the liberal professions."

COMPARATIVE VIEW OF THE POPULATION FOR FIFTY-FIVE YEARS.

1790.	1800.	1810.	1820.
82,548.....	162,686.....	252,433.....	344,773

1830.	1840.	1845.
516,823.....	691,392.....	774,325

We will here give a list of the state officers, &c., together with other interesting matter, for which we are indebted to the Carolina and Georgia Almanac for 1850:

Governor.—George W. Towns, (of Talbot,) salary.....	$3,000
Secretaries.—John T. Smith, (of Troup,).....	1,000
" Julius M. Patton, (of Cass,).....	1,000
" Benjamin F. Gullett, (of Talbot,).....	1,000
Messenger.—Charles C. Rice, (of Baldwin,).....	1,600
Secretary of State.—George W. Harrison, (of Randolph,).....	1,600
Comptroller-General.—Ezekiel S. Candler, (of Carroll,).....	1,600
Surveyor-General.—James R. Butts, (of Sumpter,).....	1,600
Treasurer.—William B. Tinsley, (of Baldwin,).....	1,600
State Librarian.—Robert Micklejohn, (of Baldwin,).....	600
President of Senate.—William B. Wofford, (of Habersham.)	
Secretary of Senate.—Luther J. Glenn, (of Henry,).....	600
Speaker of House of Representatives.—John W. Anderson, (Savannah,).	600
Clerk.—B. K. Harrison, (of Stewart,).....	600
Director of Central Bank.—D. C. Campbell, (of Baldwin,).....	1,200
Cashier.—A. M. Nisbet, (of Baldwin,).....	500
Principal Keeper of Penitentiary.—W. W. Williamson, (of Cherokee,).	1,600
Book Keeper.—H. G. Williams, (of Talbot.)	
Inspector.—A. M. Horton, (of Baldwin,).....	500
Physicians.—Drs. Tomlinson, and George W. Fort, (of Baldwin,).....	400
Chaplain.—Rev. William Johnson, (of Baldwin.)	
Trustees of Lunatic Asylum.—Dr. Tomlinson Fort, Dr. H K. Green, and P. B. Stubbs.	
Resident Physician and Superintendent.—Dr. T. F. Green.....	1,500

* It is believed the federal census of the present year will show one million inhabitants of Georgia.—(*Ed.*)

This State is divided into ninety-four counties. Each county, is entitled to one or two representatives in the General Assembly in proportion to its population. Most of the counties send only one representative, while thirty-seven are entitled to two. There are in the State forty-seven senatorial districts, each of which is entitled to send one member to the upper house of the Legislature. The State also is divided into eight congressional districts, each of which sends a member to Congress.

The first district, represented by Joseph W. Jackson, Democrat, consists of Appling, Bryan, Bulloch, Camden, Chatham, Clinch, Effingham, Emanuel, Glynn, Liberty, Lowndes, McIntosh, Montgomery, Scriven, Telfair, Tatnall, Thomas, Ware, Wayne—19 counties.

The second district, represented by M. J. Welborn, Democrat, consists of Baker, Decatur, Dooly, Early, Houston, Irwin, Lee, Macon, Marion, Muscogee, Pulaski, Randolph, Stewart, Sumter—14 counties.

The third Congressional district, represented by Allen P. Owen, Whig, consists of Bibb, Butts, Crawford, Jasper, Jones, Monroe, Pike, Talbot, Twiggs, Upson, Wilkinson—11 counties.

The fourth district, represented by Hon. A. Haralson, Democrat, consists of Campbell, Carroll, Coweta, De Kalb, Harris, Fayette, Heard, Henry, Meriwether, Troup—10 counties.

The fifth district, represented by Thomas C. Hackett, Democrat, consists of Cass, Chattooga, Cherokee, Cobb, Dade, Gordon, Floyd, Forsyth, Gwinnett, Lumpkin, Murray, Walker, Paulding, Gilmer, Union—15 counties.

The sixth district, represented by Howell Cobb, Democrat, consists of Clark, Franklin, Hall, Habersham, Jackson, Madison, Newton, Rabun, Walton—9 counties.

The seventh district, represented by Alexander H. Stephens, Whig, consists of Baldwin, Greene, Hancock, Laurens, Morgan, Oglethorpe, Putnam, Taliafero, Washington—9 counties.

The eighth district, represented by Robert Toombs, Whig, consists of Burke, Columbia, Elbert, Jefferson, Lincoln, Richmond, Warren, Wilkes —8 counties.

The senators in congress from Georgia are—J. M. Berrien, Savannah, and William C. Dawson, Greensboro'—both Whigs.

Here is a table, taken from p. 58 of the work before us, showing the annual Revenue and Expenditure of the State of Georgia:

REVENUES.

General tax, viz., capitation-tax on free white males, (from 21 to 60)—slaves—free persons of color—lawyers—physicians—factors and brokers; —tax on land, per acre, according to its classification as to quality—on town lots, merchandise, ferries, toll-bridges and turnpikes, the returned value—on money at interest—capital of manufacturing companies—capital of banks of other States employed in this, and sales of merchandise by factors, amount returned—and on pleasure carriages and billiard tables, the number returned.

Net amount, 1848, about	$265,000
Tax on bank stock, special	19,300
Dividends on bank stock, "Education Fund," $262,300	19,250
Miscellaneous sources (say)	10,000
	$313,550

EXPENDITURES.

Legislative Department:		
Pay of members and officers of the General Assembly, (average of biennial sessions $60,000,) making annual average	30,000	
Printing for the Legislature, (average $10,000,) annual,	5,000	
		35,000
Executive Department:		
Salary of Governor,	3,000	
" " 3 Secretaries, at $1,000 each,	3,000	
" " Secretary of State,	1,600	
" " Treasurer,	1,600	
" " Comptroller General,	1,600	
" " Surveyor General,	1,600	
		12,400
Judiciary Department:		
Salary of 3 Judges Supreme Court, at $2,500 each,	7,500	
" " Reporter of Supreme Court,	1,000	
" " 11 Circuit Judges, at $1,800 each,	19,800	
" " 11 Solicitors General, at $225 each,	2,475	
		30,775
Public Debt, reduction of	50,000*	
" " Interest on	111,500	
		161,500
Poor Schools, aid of,		19,250
Lunatic Asylum,		11,625
Deaf and Dumb Asylum,		4,500
Contingent Fund,		10,000
Printing Fund,		2,000
Military Purposes,		1,500
Miscellaneous Appropriations, annual average, (say)		5,000
		$293,550

Under the head of the judiciary, Mr. White presents the following analysis:—

"1. A Court of Errors and Appeals, consisting of three Judges, elected by the Legislature for six years. This is an appellate tribunal for the correction of errors in law and equity from the Superior Courts. The terms are held in Savannah, Milledgeville, Macon, Hawkinsville, Americus, Talbotton, Decatur, Gainesville, and Cassville.

"2. Superior Court; Judges elected by the Legislature for four years. This is a court of general jurisdiction, both as a court of common law and equity, held twice every year in each county in the State, and has the power of correcting all errors in the inferior judicatories, and exclusive jurisdiction in all criminal cases, and in the trial of titles to real estate.

"3. Inferior Court: Consisting of five justices in each county, who are elected by the people for the term of four years. The terms of this court are two in each year. This court has concurrent jurisdiction with the Superior Court, in actions of debt, trespass, &c. &c., and has the supervisory power in their counties, over bridges, ferries, roads, public buildings, &c., &c., and also the powers of a Court of Ordinary, in all matters in relation to the estates of deceased persons, the care of the poor, and in all actions other than those in which the title to land is involved.

"4. Justices' Courts: Consisting of two justices for each militia district, in every county, who are elected by the people of their district. They have jurisdiction in cases of debt, when the same does not exceed thirty dollars.

"The laws of Georgia were compiled by Marbury and Crawford, from its earliest settlement as a British province in 1775 to 1800; and by Augustine S. Clayton from the year 1800 to the year 1810, inclusive; by L. Q. C. Lamar from 1810 to 1820, and by William C. Dawson from 1820 to 1830, inclusive.

"Digests of these laws have been made by Prince and Hotchkiss, and an Analysis of the Statutes of Georgia, compiled by Howell Cobb, Esq.—P. 61.

The constitution of Georgia provided for the establishment in the State of a "Supreme Court for the Correction of Errors." Yet, notwithstanding the obvious necessity of such a tribunal, it was 68 years before it was

* And all surplus amounts unexpended.

established. The consequence was, that there being in the state a half dozen or more Superior Courts, as they are styled, of equal grade, several very diverse systems of practice sprung up; and the law, especially the common law, meant as many different things as there were Judges of the Superior Courts. We had no uniform system of practice; and the evils consequent upon this state of things were innumerable. At length, in 1845, the Legislature established the tribunal which was provided for by the Constitution, and Joseph Henry Lumpkin, of Athens, Eugenius A. Nisbet, of Macon, and Hiram Warner, of Greenville,—all distinguished for their legal abilities, were appointed Judges by the Legislature. They each hold their office for the term of six months.

These Judges fill their places with distinguished ability. The decisions in common law and equity which have been made by them, already fill seven good octavo volumes. The law, as expounded in these reports, commands the highest respect all over the Union. No Court which has not been in existence longer, can lay any higher claim to a clearer and more able exposition of legal principles. Chancellor Kent in his life, to whom Mr. Kelly—first reporter, now dead—sent his first volume, pronounced the decisions of the Judges clear, able, and made according to the principles of the common law, which, he thought, had been too much neglected in this country through the ignorance, carelessness, and presumption of our Judges.

Judge Warner is the controlling spirit upon the Supreme Bench, so acknowledged by all classes, and especially the profession. He gives his decisions in a clear, terse, vigorous style, forgetful of ornament in language, and of all things else save an explicit expression of the law. Judges Lumpkin and Nesbit are men of undoubted ability, and are good lawyers. The fault we have to find with them is, that they load their decisions with too much rhetoric, and too frequently step aside to say something pretty, when plainer and more succinct language would better explain the principles of the law. Judge Warner's language is purely legal language, not too dry, nor, at the same time, too flowery. It reminds you of the language of Kent, Story, and Blackstone. On the other hand, Judge Nesbit's language is better suited for a commencement oration, and Judge Lumpkin's for the ardent declamation of the advocate. Nevertheless, as I have already said, all three of these Judges are able and distinguished men, and every Georgian has cause to be proud of the incumbents of the Supreme Bench in his State.

Immediately upon the establishment of this Court, it began to root out the loose and illegal practice which had sprung up in our Circuit Courts. The old and artful counsellor found that all his tricks and chicanery would no longer avail him. The pettifogger found that he must take more care in the preparation of his declarations, answers, and bills in equity. The pedant at the bar found his favorite dogmas overturned, and the weak-minded Judge upon the bench below, experienced the chagrin and mortification of having some of his favorite decisions overruled. Now the lawyer, instead of spending his time over the card-table, and *around* the *bar*, instead of *within* the *bar*, depending upon the inspiration of brandy and his ready wit, instead of the *viginti annorum lucubrationes*, had to spend his time in his library, pouring over the dusty and cob-webbed tomes so long neglected, and making out briefs which he never needed before.

All this was too much. The Supreme Court raised about its ears a storm which, at one time, threatened to sweep away its existence. Empty-headed Judges, whose decisions were overruled, demagogued it—pettifoggers, scribblers, would-be lawyers, prated and fretted, and all united to overthrow a tribunal whose operation required judges and lawyers to have

some brains. But it was "*no go*"—as the New-York law reformers wish to render the words *ne exeat*. The Court gained more and more in the favor and affections of the people, and it is now founded upon a rock, permanent and steady. Never had the Georgia Legislature even, made such an ass of itself—though much addicted to such tricks—as it would have done, had it repealed the statute establishing the Supreme Court according to the Constitution of the State.

[To be continued.)

PROGRESS AND RESOURCES OF THE SOUTHERN STATES.

1.—THE COAL MINES OF ALABAMA COMPARED WITH THOSE OF THE OTHER STATES.

In the first annual report of 1850, of the Geology of Alabama, by M. Tuomey, Esq., State Geologist and Professor in the University of that state, there are the following remarks upon Alabama Coal, which we regard as of great interest:

THE earliest notice of the use of Alabama coal that I have been able to find, is contained in Silliman's Journal, vol. xxvi., 1834, in a note by Dr. Alexander Jones, of Mobile, which, notwithstanding unavoidable mistakes, I have thought of sufficient interest to insert here.

BITUMINOUS COAL.

This state is very rich in bituminous coal, of a most excellent quality. It is in every respect equal, if not superior to the best English coal. I am using some of it in my little laboratory. It is very heavy, and burns with a good flame, and gives out much heat. It also yields the carburetted hydrogen gas in immense quantity. The vein, or formation of this coal, is very extensive. It is first seen in the bed of the Black Warrior river, near Tuscaloosa, and next appears on the surface of the ground, to the north-east and east of that town, and pursues that course till it crosses the Alabama and Coosa rivers at their falls, or just above them. It passes, probably, for some distance into Georgia, and not improbably, in its south-western or western direction, into Mississippi.

Its principal width is found in Shelby and Bibb counties, where it is forty miles wide; it occupies the whole ground under the surface, and is covered by superficial patches of hard or soft slate stone, or shale, other minerals being rarely found near it. Blacksmiths in its neighborhood dig it up, and work it in their furnaces. It is also used in an iron foundry in Shelby county. The land is smartly broken. The growth consists principally of chestnut, oak and pine, and being more or less poor, it has never, much of it, passed yet out of the hands of the general government, and can therefore be bought by any one who wishes to own it at $1 25 an acre.

In the winter season this coal is brought down the river to Mobile from Tuscaloosa, in flat-bottomed boats, and sold at the same price as the Liverpool coal, or at from $1 to $1 50 per barrel. The strata of this rich and extensive coal bed have an inclination of a few degrees to the S. S. E.

I presume you will, ere long, receive a correct geological account of this extensive and interesting coal formation, from some gentleman of the Alabama University at Tuscaloosa, which is a very favorable point for observing it.

The facts which I have communicated were obtained from an eminent lawyer of this place, who had visited that region, and from a laboring man, who had worked the coal in a blacksmith's shop, which he owned in that region. He informed me, that having worked at the coal mines in Virginia, near Richmond, he considered this coal deposit the richest, and as containing the best coal he had ever seen.

For domestic purposes, the Alabama coal has been sufficiently long in use in the state to have its quality in this relation settled. In Tuscaloosa it is used in the houses, to the almost entire exclusion of wood. The price varies from ten to twelve cents per bushel. It is also used in Mobile for similar purposes, but to what extent I do not know.*

During the months of August, September and October, (1849,) there were about 200 persons engaged in the coal trade of the state; and as only three beds are worked under ground, the rest of the coal raised is taken from the bed of the river, and streams, where of course operations can only be continued during the low stages of the water; and in general, it is only the seasons of leisure that can be devoted to the business by farmers, who are the principal proprietors.

It has already been stated, that the obstruction of the Warrior, which terminates the navigation of that river, is occasioned by the coal measures. Above this point the river is only navigable during freshets, at which times alone coal is carried to Mobile. The boats used are common flat-boats, with gunwales made of solid timbers; the first class have a capacity of about 2000 bushels, draw 20 to 30 inches of water, and cost $70, or thereabouts. Coal is brought down the river to Tuscaloosa at about four cents a bushel, a distance of 50 miles, and thence to Mobile, a distance of 355 miles, at an additional cost of nearly four cents; the boat being a dead loss in either case, as it brings but a few dollars.

Coal is brought to Tuscaloosa in wagons from those beds exposed 5 or 6 miles east of the river, and 10 to 18 miles from the city. When the plank road, at present in contemplation, is constructed, it will greatly facilitate operations in that direction, more particularly as it is intended to reach the iron region of Roup's valley.

It will be seen from the map, that the Warrior runs through the centre of the coal field; and its improvement, 75 or 100 miles above Tuscaloosa, would leave little to be desired, in relation to the transportation of coal from this region; for it is supposed by those who have examined it, that with a very moderate outlay, the river below Tuscaloosa may be rendered navigable through the summer for light-draught stern-wheel steamers.

The attempts at improving this river, up to the present time, have been conducted on two different plans, the one in relation to its navigation at low water, and the other to high water navigation. The first and most expensive operations consisted in the construction of jetties, &c., with the view of turning the water into a narrower channel. The plan appears to be good, but the execution was defective. The jetties were, in many cases, not connected with the banks, and not reaching above water, they became dangerous, submerged islands, to boats coming down at high water.

Later improvements have been altogether conducted with the view to the removal of obstructions to high water navigation, and consequently, it became necessary to undo, in many cases, what had already been done, at considerable expense.

The work principally consisted in the removal, from the shoals, of prominent points of rock, widening channels, cutting away dead timber, &c. The execution of this was entrusted to sensible men, who knew from experience the dangers and obstructions of the river, and I can bear testimony to the faithful manner in which they have discharged their duties. The clearest proof of this is found in the fact, that formerly, it required 4 feet rise in the level reaches to produce 1 on the shoals; now, 3 feet is sufficient to give the same rise on the shoals. The nature of the obstructions in the river may be gathered from what

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*Mr. Hanby's account of his attempts at the introduction of Alabama coal into the Mobile market, would furnish an amusing chapter, on the difficulty of diverting any trade from its accustomed channels. The intelligent proprietors of the gas works in that city, however, were not slow to recognize its value as a material for the manufacture of gas; and it has now, where it is known, I believe, a fair reputation. Much of what has heretofore been carried to market, under the name of coal, included everything that resembled it in color; but I know from observation, that those engaged in the business at present, take every reasonable precaution to reject all impurities.

has been said of the geology of this region. The coal measures are made up, as I have shown, of alternations of hard and soft beds; the latter are worn down, or washed away, whilst the former are left, and hence, the bed of the river consists of a succession of level reaches and shoals. In the level portions, beds of coal are generally found, and it would be no difficult task to cut a channel through the shoals, but, without great caution, this would let the water off too fast; and it is easy to see that the whole river might, by continuing the process, be converted into a rapid. In this consists the danger of river improvements, by the removal of shoals.

The alternations of shoals and deep water on the Warrior, fits it, in a peculiar manner, for what engineers call slack water navigation, which is effected by the construction of dams across the river, that converts it into a canal. The dams are passed by either locks or sluices.

I have alluded to this subject because of the intimate connection of the improvement of this river with the developement and interests of the coal field through which it flows.

A glance at the map of the United States and South America, will show the importance of the geographical position of our coal fields. It will be recollected that the Alabama coal fields come down to the head of navigation on the Warrior at Tuscaloosa; and within ten miles of that point on the Cahawba. It may be interesting here to take even a rapid view of the most available deposits of coal, on the Atlantic slope, the Gulf of Mexico, and the region still farther south.

VIRGINIA COAL FIELDS.

Towards the north, the Virginia coal region approaches the sea-board nearer than any other. The Clover Hill pits, situated in Chesterfield county, are connected with the navigation of James river at Port Walthall, by a railroad 22½ miles in length, which cost the company $100,000.

The price of the coal on tide water is $3 to $3 50 per ton, and cost of transportation $1 per ton. At these pits 6000 bushels a day are raised.

At Port Walthall it is shipped down the river for the northern and southern ports.

MARYLAND AND TENNESSEE COAL FIELDS.

The next coal region, along the sea-board, is that of Maryland, at Cumberland. Coal from this region, in 1847, paid for transportation to Baltimore $2 50 per ton, and to Washington, $3 56 per ton. In the former city the price in 1848 was $6 to $6 25 per ton. The transportation on the canal being only one half cent per ton per mile. The length of this canal is 187 miles. These, and the Richmond coal mines, are the most accessible sources of bituminous coal for the Atlantic States.

Of the Tennessee coal fields, Dr. Troost states, that "coal is shipped from various points, but particularly from Kingston; from whence it passes down the Tennessee river more than six hundred miles, to the Ohio, and thence, more than a thousand further, to New-Orleans; making a voyage of no less than *seventeen hundred* miles of inland navigation. From the western margin of the Tennessee coal-fields, a certain quantity of coal is sent down the Cumberland river, nearly an equal distance, to its place of destination."*

ILLINOIS AND KENTUCKY.

The rest of the coal brought down the Mississippi, is, I believe, derived from the Illinois and Kentucky coal fields, of which Mr. Taylor gives us the following statistics: "There is no coal in the Ohio river nearer to its junction with the Mississippi, than Salem, near Shawneetown, 16 miles above the mouth of the first named river. On the Mississippi, it is rather a shorter distance, being sixty miles to Muddy Creek, and thence 25 miles up that creek to the first coal

* Statistics of coal; to which valuable work I am indebted for much of the information contained in this article.

bed there, or 12 miles by land. Some coal operations commenced here some few years ago, having in view the supply of the towns along the Mississippi, as far even as New-Orleans. The present supplies of coal to the lower country are obtained from a vast distance up the Cumberland and Tennessee rivers, but especially from Wheeling, Pittsburg, and the intermediate points, 900 miles farther from the market than the Illinois coal of Muddy creek. The estimated expense of delivering this coal at New-Orleans, by arks, is about $2 25 per ton; while the minimum price of coal there is 25 cents a bushel; $7 50 a ton. In winter time from 50 to 62½ cents per bush., or $12 to $15 per ton, have been occasionally the retail price there. This Muddy Creek coal seam is a horizontal bed 6 or 7 feet thick, above which is another vein, not hitherto worked.

"Coal can be thrown from the mouth of the drift into a boat. Its quality is most excellent, igniting readily, and caking together perfectly, without making much clinker. It has been used for 50 years by the old French settlers, to make edge tools, which have borne a high reputation.

"What is termed St. Louis coal, supplied to the steamers, burns with a good flame, and cements like that of Pittsburg; ashes dark gray, in small quantity, and consumes with little waste. It is often mixed with yellow sulphuret of iron, in flakes, occurring on each face of the sectional fracture; and consequently is not, we understand, in so good repute for the purposes of iron manufacturing."

At Hawsville, on the left bank of the Ohio, 120 miles below Louisville, is a coal bed four feet thick. The upper 18 inches of this bed consist of Cannel coal; the remainder is common bituminous coal, two and a half feet.

The price of this coal at New-Orleans,* was 62½ cents to $1 per barrel, of two and a half bushels. It is in request there for the use of the towboat companies.

Hawsville is about 258 miles above the mouth of the Ohio. The coal seam is nearly horizontal—appearing on both sides the river, in a position remarkably favorable for loading into vessels lying in the Ohio. It is a compact, largely conchoidal coal, producing a bright flame; does not cement or adhere together in burning, but on the contrary, falls into profuse white ashes. Although 700 miles in advance of Pittsburg, it has been hitherto, we are told, unable to compete with that coal, which is floated down the Ohio in arks, and, it is said, can be mined cheaper.

The Hawsville Cannel is especially liked for steam engines. For domestic use we think it is objectionable, on account of the great quantity of very white ashes which are left after combustion, filling up the grates, &c.

CUBA COAL.

In Cuba, a seam of Asphalte, or Chapapote, as it is called, is found about three leagues from Havana. There are other seams of this highly bituminous substance in other parts of the island, and although it is said to be an excellent "combustible, when much flame is a desideratum, for such purposes as evaporation, and for heating furnaces; and in this respect it must be superior to many descriptions of fuel whose proportion of volatile matter is less;" yet I cannot learn that it is gaining ground as a fuel, for even the generation of steam; and it is quite certain that the depot of coal for the Royal Mail Company's steamers,

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* The coal consumed in New-Orleans is brought, principally, down the Mississippi; the price ranges between 75 cents and $1 75 per barrel; 13 of which barrels are estimated equal to a ton. The following table (from the Statistics of Coal) exhibits the increase of consumption of coal in that city for a series of years:

Yr.	Bbls.	Yr.	Bbls.	Yr.	Bbls.	Yr.	Bbls.	Yr.	Bbls.
1830	40,800	1836	85,328	1841	121,233	1844	227,788	1846	262,800
1832	50,000	1838	99,220	1842	140,582	1845	281,600	1847	356,500
1834	60,000	1840	99,919	1843	255,568.				

is supplied by coal imported from the British dominions, as will appear from the following extract:*

"The trade in coals from Great Britain to the West Indies is limited. They are partly required for furnaces, but the principal quantity consists of a particular description of coal for steam purposes, under contract with the British government, and is a trade of comparatively recent origin. The government stations are Jamaica, Antigua and Barbadoes, and some coals go to St. Thomas's. The average price of coals there is about 45s. to 47s., ($10 90 to $11 40,) according to the demand. They have been freighted from London, costing 20s. per ton there. The freight from Newcastle to the West Indies is 27s. 6d. to 30s."

"*English Bituminous Coal imported into the West Indies.*

Years.	Tons.	Years.	Tons.
1831	48,536	1841	71,311
1832	43,980	1844	77,338
1840	82,564	1845	102,339

"*British Coals imported into foreign West Indies.*

1844	26,592
1845	22,154

"In the West Indies, the price of coal varies from 45s. to 47s. per ton for government contracts; it has been occasionally much higher.

"The importation of copper ore from Santiago, and other ports of Cuba, constitute a very considerable portion of the trade of Swansea. The ships employed in the trade are from 300 to 500 tons burden. The chief back freight for these ships is Welsh coal. It was feared by the shippers of this Welsh coal, that the discovery of a supposed bituminous coal of high value, at more than one point within a few miles of a shipping port of the island of Cuba itself, would materially diminish, if not entirely cut off, the market for the supply of the free-burning coals of South Wales. Owing, however, to other circumstances, rather than to any deficiency in the quality of the Cuba asphaltum, there has not, at present, been experienced any change in the importation of foreign coals; but the demand in a tropical climate can never, we think, for obvious reasons, be very extensive."

Beds of asphaltum are also found in Barbadoes.

TEXAS COAL FIELDS.

"Coal is well known to exist abundantly in Texas, although the country has not been geologically examined. There is no doubt but coal prevails at intervals entirely across the country, in a north-east and south-west direction. Its general position is about two hundred miles from the coast.

"On Trinity river, two hundred miles from Galveston, the coal region there was investigated in 1846, and found to be more extensive than was anticipated. A company, under the title of the 'Trinity Mining Coal Company,' was incorporated by an act of the Texan Congress, in 1840. Both anthracite and semi-bituminous coal, somewhat like the Cannel, in appearance, occur here.

"Mineral coal, in great abundance, prevails not far from the Mustang Prairie. It is also found, accompanied with excellent iron ore, in the vicinity of Nacogdoches. According to report, this coal is abundant, rich, and of a fine appearance.

"A bed of coal extends across the Brazos river, towards the Little Brazos and the San Andres, down which stream it may without difficulty be transported at high water.

"Near the city of Austin, on the eastern border of the Colorado, is a peak, called Mount Bonnell, overlooking Austin, and having a fall of seven hundred feet perpendicular, to the bed of the Colorado. This and other hills, although not scientifically examined, are known to contain beds of anthracite coal.

"On the Rio Grande, south-west of Bexar, is a great abundance of bituminous coal. The navigation of this river is reported to be free for eight months in the year."

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* Statistics of Coal.

This, I believe, includes all our information on the subject of the Texas coal region.

PANAMA COAL.

The coal of this region appears to be brown coal, or lignite, and like that of Talcahuano, in Chili, is supposed to belong to the tertiary formation. This is the character of the coal, so far as we know, of the whole of South America, nor have we any positive evidence of the existence of true coal on any part of this immense continent. Of the quality of the South American brown coal, we have the most contradictory accounts: by some it is said to be of good quality, whilst by others it is condemned as inferior.

I have thus, I suppose, fairly represented the sources of this fuel that would be likely to come into market in competition with the Alabama coal, on the Gulf of Mexico, and still farther south and west; as well as the prominent conditions under which it is found, so far as they would be likely to affect its price and supply in that market. I do this principally with the view of furnishing data to such of our citizens as may feel disposed to investigate the subject in a commercial point of view.

It now only remains for me, in conclusion, to show the comparative value of our coal, for the purposes to which it is likely to be applied.

Although I have not access to an official report on the coal used in the gas works in the city of Mobile, I am informed that it is highly valued for the manufacture of gas. But even in the absence of this practical knowledge, we have abundant evidence of the adaptation of our coal to this purpose, as well as to other ordinary uses, in the following analyses, for which we are indebted to Sir Charles Lyell:

*Analyses of Bituminous Coal.**

Virginia.	Clover Hill	76.49	13.64	9.87
	Black Heath	80.38	10.27	9.35
	Deep Run	82 90	10.74	6.36
	Powell's	86.54	8.76	4.70
	Alabama	80.96	12.96	6.08

The Virginia coals, which are the most bituminous in the United States, furnish the principal part of the coal used in the gas works of New-York, Philadelphia and Charleston. And until recently, the Black Heath mines furnished the chief supply for the former cities.

The value of coal for the production of gas, other things being equal, will depend on the amount of hydrogen they contain. In the five preceding specimens the hydrogen stands thus:

Clover Hill	5.23
Black Heath	4.08
Deep Run	4.77
Powell's	4.23
Alabama	5.13

And the value of coal, as ordinary fuel, is derived from the carbon and hydrogen. Now these analyses, in this relation, settle the position of the Alabama coal.

COAL FOR STEAM PURPOSES.

In connection with the value of bituminous coal, when applied to steam navigation, Mr. Trimble gives some experiments made by steamboats on the Ohio. The result is as follows:

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* Mr. P. Henry, Quar. Jour. Geol. Soc. No. 11, p. 270.
† Statistics.

"Four and fifty steamboats, using twenty cords in the twenty-four hours, and running two hundred days per annum, will consume an amount of wood, whose value, at $2 50 per cord, would be $4,500,000
By the use of coal, during the same, and producing similar effect.. 1,500,000

Annual saving $3,000,000

The following considerations are urged in favor of coal:

1. It makes a more uniform and more easily regulated fire than wood.
2. The economy in the use of coal over wood is three-fifths.
3. The weight of equivalent quantities of coal and wood, is as one to three.
4. The bulk do. do. do. one to nine.
5. The labor and expense of putting on board, as one to four."

2.—TOPOGRAPHY OF MIDDLE GEORGIA.

We take the following from a contribution made by Dr. Pendleton, to Fenner's Medical Reports of the South:

That region of country properly known as *Middle Georgia*, and to which this paper relates, is bounded on the south by an isothermal line, running diagonally through the state, about 30° south of west from Augusta to Columbus, varying but little in a direct route through Milledgeville and Macon. The northern line may be considered as running parallel with this from Elbert county on the Savannah river, through Walton, to Heard county on the Chattahoochee. This forms the true isothermal line between Middle and Upper Georgia—the one being suited to the production of cotton, the other almost exclusively restricted to grain.

A latitudinal line running west from a point on the Savannah, would strike nearly a degree higher on the western boundary of the state; but the southern termination of the Alleghany Mountains assumes this diagonal line in Upper Georgia, and I have no doubt impresses itself on all the region below, even to the Atlantic—hence Augusta, in the east, is about as warm as Columbus in the west. This isothermal line runs directly parallel with the shore of the ocean, which seems to be conformed to the general geological aspects of the country. Thus, we perceive a granite ridge extending along the above-mentioned line between Lower and Middle Georgia, over which all the waters of the state and the adjoining states pour themselves in shoals or cataracts, and thence glide on by a gradual and easy descent to the ocean. The Savannah, at Augusta, the Oconee at Milledgeville, the Oakmulgee at Macon, and the Chattahoochee at Columbus, all have impassable reefs, constituting these cities the heads of navigation. The same line crosses Hancock county at the shoals of the Ogeechee, and by Garnett's Mills on Buffalo Creek; and I doubt not every tributary of all these rivers presents the same shoaly appearance in running over this granite ledge, which separates the Plutonic and Metamorphic regions of Georgia from the alluvial or tertiary. No granite is found below this line to the ocean, few rocks of any kind, and no shoals of water; all is a vast pine forest, with a grey, silicious soil, abounding in tertiary fossils, mostly Eocene and Pliocene.

Following the line of this Plutonic ridge, which is about fifteen miles in width, we find numerous deposits of Kaolin, of a beautiful, white variety, which will some day be brought into requisition for the manufacture of porelain ware. This is, doubtless, a decomposition of Serpentine or Felspathic rocks, which, not being able to stand the ravages of time like the everlasting granite, have dissolved to form another mineral of more value to man. In some places, as in Richmond county, these deposits form high cliffs, marking distinctly the ancient shore of the Eocene Sea, which once swept solitarily over the vast plain below.

Above this ridge there seems to have been an ancient valley, now filled with metamorphic rocks, through which the rivers glide with a much more gradual descent than they do higher up the country, where another and another granite ridge rises successively, on one of which rests, in beautiful and majestic proportions, one of the wonders of the new world, the *Stone Mountain of De Kalb*. Beyond this ridge the culture of cotton ceases in Georgia, except in

small patches for domestic use, and perhaps more extensively in the valleys of the Coosa, on the western borders of the state.

The native soil of Middle Georgia is a rich, argillaceous loam, resting on a firm clay foundation. But the face of the country being hilly, and in some places semi-mountainous, much of this good soil has long since been washed into the valleys beneath, under the wretched system of agriculture at first adopted in this country. In some of the richer counties, nearly all the lands have been cut down and appropriated to tillage, a large maximum of which has been worn out, leaving a desolate picture for the traveler to behold. Decaying tenements, red, old hills stripped of their native growth and virgin soil, and washed into deep gullies, with here and there patches of Bermuda grass, and stunted pine shrubs struggling for a scanty subsistence on what was once one of the richest soils in America.

The water courses have received the same tincture of the hills, especially after heavy rains, holding in solution a large proportion of alumina and the red oxide of iron, and presenting a muddy and forbidding aspect to one accustomed to the clear, pellucid streams of many portions of our country, especially the pine regions. There are no lakes, and but few lagoons or native ponds in this region of Georgia. Art, however, has not failed to make up the deficiency in this respect, by improving many of the thousands of mill-seats on the numerous streams that water this favored region, thus forming artificial ponds enough to produce a good crop of autumnal fevers for the anxious sons of Esculapius to reap an annual harvest from. These, however, when decidedly pernicious, have in some instances been abolished by law, to the no small comfort and health of the inhabitants within reach of their deadly borders. Agriculture also has come to the aid of suffering humanity, of late years. Many creeks and marshy lands are being drained for purposes of cultivation, which adds no little to the health and wealth of the country. The improved method of hill-side ditching also is helping much to protect the soil from washing into the bottoms, and at once enrich and beautify the country.

The native growth of this country is oak and hickory, interspersed with the short leaf pine, poplar, gum, &c., all indicating a good soil. It is a little singular that when the lands are exhausted and turned out to rest, they invariably spring up with the long leaf pine. It is accounted for on the chemical principle of rotation in crops. The first growth had exhausted all the richer elements in conjunction with the cultivation, and now no forest tree but the pine could find sufficient nourishment in the soil to cause it to spring up and become a tree; partly from the fact, that it does not require so many of the salts, but mainly because it sends its root deep in the earth, and brings them up whence they had filtered away from the surface for ages. But this is a digression.

It is necessary for me to say a word in regard to the population. They are strictly an agricultural people, inhabiting what is properly a rural district, and are made up of two distinct classes, the white and the black. Formerly, when the country was in its pristine strength and glory, they averaged, probably, some twenty inhabitants to the square mile. Now it is reduced to about sixteen, and in some of the older counties it has been even lower than this, but they have, in the last ten years, been showing a gradual increase. The proportion of whites to blacks is considerably in favor of the latter, especially in the lower belt of counties, where cotton is a more lucrative article of produce.

3.—MINERAL WATERS OF ALABAMA.

The mineral springs that flow from the silurian rocks, are both saline and sulphurous. The most important and best known are Blount Springs. These have been so long and so frequently visited by the citizens, that they require no description. They have, moreover, been analyzed by Professor Brumby, and his analysis has been recently republished and widely distributed.

One fact is remarkable in these springs—they are situated in precisely the same geological position as the celebrated springs of Virginia, which are connected with the anticlinal axes. In the same valley, there is another spring near Brooksville, above Blountsville.

The St. Clair Springs also occur in a similar position. A bold limestone

spring rises a few yards from the place, and along the elevated ground on the banks of the stream flowing from this, numerous mineral springs burst forth around the hill upon which the houses stand. The principal, and the only one examined, is situated toward the east, alongside of a bed of magnesian limestone. Besides its being highly sulphurous, I found in the water, on a hasty, and consequently imperfect, examination made on the spot, salts of lime, magnesia and soda in valuable quantity. To make anything like a thorough examination of the springs of Alabama, not already examined, would require more time than was devoted to the entire survey.

This spring is situated in a healthful region; the proprietors are improving the grounds and buildings, and making it otherwise a pleasant place of sojourn for the summer.

The Shelby Springs, like those of Blount, are situated near the black shale. One issues from the limestone, and is calcareous, and the other from the shale, from which it derives its sulphurous and chalybeate properties. This has also been analyzed by Prof. Brumby. The situation is beautiful, and the establishment is arranged with a view to both taste and comfort.

I am not quite certain as to the geological position of the Talladega Springs; but of the qualities of the water, judging from Prof. Brumby's examination, there can be no doubt. There are many other springs in the state of deserved reputation, of which I have not yet collected the materials to give any account. Enough is already known to make it evident that the citizens of Alabama need not leave the state in search of more valuable mineral waters.—*Tuomey's Rep.*

4.—SUMMER RESORTS AT THE SOUTH.

SULLIVAN'S ISLAND, S. C.

Last summer it was our good fortune to visit again the home of our nativity, Charleston, and we were not a little delighted to mark the evidences of its great progress.

From the city we visited Sullivan's Island, which is to become the Rockaway of the South, and which has already a splendid hotel, and when we were there, was crowded with visitors.

Dr. Irving, of Charleston, whose pen gives life to everything that he touches, thus describes the various improvements on the island:

"In sooth, monsters—
That thro' a throat, as black as Erebus,
Disgorge dense smoke, and vomit fiery sparks.
They run
On mystic wheels, which plough the river's breast
To ceaseless furrows of white milky spray,"

"But to descend from poetry to plain prose, there is no question that these cheap conveyances from the city to the suburbs, constituting as they do, as regular a vehicular communication, and as much to be relied upon, as if our transit was over a bridge, are the greatest conveniences for many, very many of our citizens, that Charleston has witnessed for some time. Facilities for travel will always cause increase of travel, particularly when combined with cheapness. As the fare now is only ten cents to Sullivan's Island and the other intermediate landing, the temptation to frequent change of air is irresistible with all sorts and conditions of our people. Some idea may be formed of the business doing by this company, when we assert, that thousands upon thousands of passengers are computed to have used the company's boats during the last spring and summer, the number doubling every month, or nearly so—the exact number we do not feel at liberty to give. This insures a handsome revenue and profit independent as it is of the income arising from the daily freight paid by the farmer and planter on his stock, crop, &c., brought to market."

MOUNT PLEASANT.

"As all the boats going from or returning to the city, stop at Mount Pleasant, great improvements have been made at that point for the accommodation of

visitors. A long wharf has been built at the company's expense, at the end of which a fine pier has been so constructed, that no matter what the time of tide, passengers are enabled to land or embark without the slightest inconvenience.

"Mount Pleasant is now becoming a populous and thriving village, by being brought, by the aid of these steam-boats, much *nearer to the city* than it was before—summer retreats are multiplying and lining its borders on the bay, and a large hotel is on the full tide of successful experiment, admirably well kept, as we understand—a great accommodation to transient visitors, or families who may only desire temporary change of air during the summer—good rooms being procurable by the week or day at very reasonable rates.

"The names of the different boats which constitute the line, of which we are now speaking, are 'The Coffee,' 'The Mount Pleasant,' 'The Hibben,' and 'The Massasoit.' New ones will be added of course, as the business still further increases. They leave the city from Market Wharf, at stated intervals, throughout the day, and return with like regularity. The 'Massasoit' and 'Coffee,' being the fastest of the boats, either one or the other, every Wednesday and Saturday, during the year, makes a trip up Cooper river, for the accommodation of the planters in that region round about.

"In addition to the boats already mentioned, the safe and expeditious steamer 'The Gov. Aiken,' makes frequent trips to Fort Johnson and to Morris' Island, and also to that once popular resort of pic-nic parties, Mathews' Ferry, in Christ Church, conveying passengers thither for a few cents; and also, when specially engaged by parties, 'by the particular request of several persons of distinction,' as Sylvester Daggerwood would say, it progresses as far as the village up the Wando, thus enabling the planters in lower St. Thomas's and in Christ Church Parish, to visit their plantations and inspect their crops, with safety and comfort, during the summer.

"In this connection we may mention a still further accommodation that these steamers are now affording from time to time, to another class of our fellow-citizens, whom we little dreamt would avail themselves of an opportunity in this way, pleasantly to beguile an hour. We allude to our city belles and beaux, who having upon occasions made up parties for an afternoon or moonlight ride upon the beach at Sullivan's Island, ship their horses in Charleston, and after reaching the Cove, disembark them; then take a delightful canter for a couple of hours, reaching in that time the extremity of the island, and retracing their steps, get back to the city at the hour they would return from a ride on the Battery or on the Charleston Neck—having escaped the dust and crowd incidental to, and inseparable from, the purlieus of a city, besides having breathed a purer air and benefited by a more invigorating exercise.

"No scene can be more entrancing to persons in a particular mood of mind, than the one viewed by moon-light from the beach of Sullivan's Island. The long and sullen swell of the Atlantic, breaking upon the sands beneath our feet, and 'the yellow beam' dancing merrily upon the luminous waters. On the land side, as we ride on, Fort Moultrie with its gateway, and its narrow postern, and its ramparts, well provided with wall pieces, call up the usual associations of the patriotic past—across the moonlit bay, Fort Sumter throws a dim shadow—still further on Fort Johnson is faintly discernible, and further and fainter still, the outline of the city may be traced in the dusky distance. Seward, the Beacons are seen on Morris' Island, like glow-worms 'to pale their uneffectual fires,' in the sweet moonlight; and the Light-house beyond, peeps occasionally with a transitory glance over the glittering ocean, like some weary sentinel, as it were, dozing at his post, tired with overwatching.

"In addition to many other local improvements on Sullivan's Island, which have recently been made, a very commodious and convenient hotel has just been built, and was opened for the reception of company on the 8th day of July last. The very appropriate title has been given to it of

'THE MOULTRIE HOUSE.'

"The need of such an establishment has long been felt. Surprise has often been expressed, that whilst every other popular summer resort has been provided with adequate accommodations for all who might be desirous of patronizing

them, Sullivan's Island should so long have remained subject to the objections, to which the absence of a large and well conducted hotel always exposes a place, in the judgment of the public. A desideratum so long required, as to this *locale*, has at last been supplied, and in a manner which promises to afford general satisfaction.

The edifice in question is at once elegant in its construction, and admirably suited to the purpose for which it is intended, and is put together, at the same time, so strongly as to render it *storm proof*. Its frame is of yellow pine, supported on brick piers, which rest on a grillage work consisting of heavy logs halved together at all joinings and crossings, and securely pinned together; these logs run under the line of frame of the building, piazza sills, and all partitions, and are bedded on the sand below the line of the water. The building proper is 256 feet long and 40 feet wide, with wings at end 100 feet long, 38 feet wide, with front piazza 16 feet wide, and back piazza 10 feet wide. The central portion of the building projects in front, and continues up through the roof, forming an attic of two stories. Its situation, too, is most judicious, commanding an inspiriting view of the harbor and bay of Charleston, and of the sea—'the open sea'—the surf of which dashes up on a wide beach, not many feet from the hotel, and then breaks into little billows, which, as if instinct with life, keep continually chasing each other, like children in play, far up on the sand. A splendid beach continues round to the very extremity of the island, forming a fine Corso for a ride or drive of many miles, by twilight or moonlight, and affording facilities for bathing (by means of covered vehicles constructed for the purpose) to those who are disposed for a bath at any time in the surf. The climate is delicious and healthful. Here, no pestilential blasts of 'villainous compounds offend;'—no insufferable heat is experienced, that *jades* us in the city through the day and night, thawing and resolving 'our too, too solid flesh into a dew;'—here, no discordant noise of the great Babel is heard; but instead, the music of the ocean is in our ears, with its bold harmonies, and the cool breeze, one 'of nature's sweet restorers,' comes wafted to us over the glad waters, from the sea, balmy and pure as a breath of Divinity."

PROSPECTS OF THE HOTEL.

"Again, it is our opinion that the establishment of this hotel will induce many Northern families to come among us and exchange an inhospitable clime for an hospitable one during the winter, certain as they will be to find those comforts which have often been inquired after, but hitherto looked for in vain, on our seaboard. We are confident the Hotel will be as well-patronized *during the winter as the summer months*. The same reason that beguiles Southern families to visit the North in the summer, will induce our Northern friends to return the compliment, and interchange visits regularly with us during the winter. We know no less than five families that arrived in Charleston to spend last winter in our neighborhood, but not being able to procure lodgings exactly to suit them, so that they could have the benefit of sea air, dispersed and sought other situations further South, either in the neighborhood of Savannah, Augustine, or Cuba."

5.—THE NORTH AND THE SOUTH IN REGARD TO SLAVERY.

We extract the following remarks from an address made a short time ago, in Macon county, Georgia, by our esteemed friend, Stephen F. Miller, Esq., a copy of which he has kindly sent us. The readers of the Review will perhaps remember Mr. Miller as having been associated a short time with us in the *editorial* department, where we found him a most laborious, active, untiring and intelligent *confrere*, and have ever lamented that his services could not have been retained for the Review. Our best wishes are with him, however, in whatever field of usefulness he may be employed.

On the 4th of July, 1776, domestic slavery existed in all the American colonies that declared Independence of Great Britain. Of the thirteen original members of the confederacy, seven have abolished it. Nine slaveholding and eight non-slaveholding states have since been added to the Union. The following table shows the slave population in 1776:

1. Massachusetts	3,500
2. Rhode Island	4,373
3. Connecticut	6,000
4. New-Hampshire	629
5. New-York	15,000
6. New-Jersey	7,600
7. Pennsylvania	10,000
8. Delaware	9,000
9. Maryland	80,000
10. Virginia	165,000
11. North Carolina	75,000
12. South Carolina	110,000
13. Georgia	16,000
Total number of slaves in 1776	502,132

African slavery would have existed to this day in the Northern States, had it been sufficiently profitable; but as the climate was too cold for cotton, rice and sugar, slave labor was discarded—it did not pay.

If concession be a merit, the South set an early example. She yielded two-fifths of her slaves in 1787, in apportioning Representatives; whilst the North retained every person of color within her limits, as a basis of power in Congress. This fact is an admission of property. What else could have induced the South to assent to this classification, or the North to claim the abatement, in the number of Representatives under the Federal Constitution? The subject produced much feeling between the two sections, and led to the first *compromise* in our political system.

As to the propriety of slave labor, the North has no right to judge. She may cherish manufactures, run ships, cultivate orchards, or do whatever else she pleases within her own sphere, and the South says not a word; but when she turns champion of a false and misguided humanity, and takes upon herself the guardianship of the South, well may we resist the usurpation. For the last fifteen years we have protested in vain. From a few crazy memorials to Congress, abolition has swelled to its present hideous bulk.

With Louisiana, we acquired from France in 1803, that immense region extending from the Mississippi to the Rio Grande, then a slave country. When Missouri applied for admission into the Union, in 1820, the North objected, because she recognized slavery in her constitution. This drew the line of 36 degrees 30 minutes, to quiet the troubled waters, and was the first exercise by Congress of the power to legislate on slavery under the Constitution. After the Treaty of 1819 with Spain, our Western limits were greatly contracted. Beginning where Virginia and North Carolina connect on the Atlantic coast, and thence westward to the 100th degree of longitude, the Missouri parallel, crossing 25 degrees, formed the barrier to slavery in all states north of it and west of the Mississippi river. Since then we have added 22 deg. to the Pacific—making about 3,500 miles from ocean to ocean. For comparison I submit a statement, showing the relative strength of the North and South, in extent and population:

FREE STATES.	Sq. miles.	Population.
1. Michigan	56,243	212,267
2. Illinois	55,405	476,183
3. Wisconsin	53,924	30,945
4. Iowa	50,914	43,112
5. Pennsylvania	47,000	1,724,033
6. New-York	46,000	2,128,921
7. Ohio	39,964	1,519,467
8. Maine	35,000	501,793
9. Indiana	33,809	685,866
10. New-Hampshire	8,030	284,574
11. Vermont	8,000	291,948
12. Massachusetts	7,250	737,699
13. New-Jersey	6,851	375,651
14. Connecticut	4,750	352,411
15. Rhode Island	1,200	108,830
Total	454,340	9,783,710

SLAVE STATES.	Sq. miles.	Population.
1. Texas	325,520	.....
2. Missouri	67,380	383,702
3. Virginia	61,352	1,239,797
4. Florida	59,268	54,477
5. Georgia	58,000	691,392
6. Arkansas	52,198	97,574
7. Alabama	50,722	590,756
8. Mississippi	47,147	375,651
9. Louisiana	46,431	373,306
10. North Carolina	45,509	753,419
11. Tennessee	44,000	829,210
12. Kentucky	37,680	779,828
13. South Carolina	28,000	594,398
14. Maryland	11,000	470,019
15. Delaware	2,120	78,085
Total	936,318	7,311,614

These tables include all persons whatever, white and black. Of the number in the South, 2,486,226 are slaves, according to the census of 1840. An enumeration is now in progress, which, we presume, will show an increase of about 30 per cent. in the entire population.

Whilst conferring together on the blessings of the Union, let us briefly glance at our resources—that our adversary may take warning, as well from what he will lose, as from what we shall continue to possess, in the event of dissolution.

The cotton crop of the United States for the last ten years has averaged 2,100,000 bales. To raise this quantity, let 500 pounds in seed to the acre, five bales to the hand, 450 pounds to the bale, and 7 cents per lb. be assumed in the estimate. We then have:

7,560,000 acres in cultivation, worth $10	$75,600,000
420,000 slaves in cotton fields, worth $600	252,000,000
Capital invested in cotton	$327,000,000

With the land and force here stated, the South is able to export annually 2,100,000 bales, worth $66,500,000—an interest of nearly 20 per cent. Out of this, however, expenses of every kind have to be paid, reducing the actual gain probably to 8 per cent. This, we think, is about the medium of the cotton growing states. Perhaps it may slide as low as five per cent. Of course there are exceptions; some planters realizing more, and others less, according to their skill and opportunity. Besides the choice hands assigned to cotton, the remaining 2,000,000 of slaves in the South may be averaged at $400, making a total of $800,000,000 of that kind of property employed otherwise. The cotton mills, railroads, merchandise and shipping of the North may be more productive, but are not equal in magnitude of value, or more essential to her well being. In addition to cotton, two other important articles produced exclusively by slave labor, ought to be mentioned—sugar and rice. These crops are of the annual value, probably, of $20,000,000; to say nothing of tobacco, worth $15,000,000 more, raised in slave states. Thus we have upwards of $100,000,000 annually produced by slave labor, for market, exclusive of provisions. For nearly all this stupendous yield, and its multiplied exchanges, the North is the carrier and commission merchant, levying enormous profits on the South. In case the Union is dissolved, Charleston, Savannah, Mobile and New-Orleans will be the importing marts for the South, instead of New-York and Boston. Manufactories are already established, and still rapidly advancing, in the South. Our neighboring city of Columbus is the future Lowell. As a mere question of profit and loss, which party will suffer most by disunion?

6.—STATISTICS OF SOUTH CAROLINA.

In the following table is exhibited, first, the total population of South Carolina, at each census taken by the United States; second, the slave population; thirdly, the number of Representatives in Congress for each decennial period; fourthly, the number of free colored persons, all according to the United States census returns. The two last columns exhibit the population, according to the state census, which is always one year in advance of the federal reckoning:

					STATE CENSUS.	
Years.	Total.	Slaves.	Rep'ts.	Free col'd.	Whites.	Slaves.
1790	249,073	107,094	6	1,801		
1800	345,591	146,151	8	3,185		
1810	415,115	196,365	9	4,554	217,842	196,365
1820	502,741	258,475	9	6,826	231,828	235,219
1830	581,185	315,401	9	7,921	250,943	285,439
1840	594,398	327,038	7	8,276	257,117	298,115
1850					280,385	358,714

Slaves are not enumerated in our state census, but the numbers above set down are taken from the report of the Comptroller-General, founded on the tax returns of the state. In the United States census, slaves are enumerated for the purpose of representation.

AGRICULTURAL DEPARTMENT.

1.—THE OLIVE TREE.

Several years ago we published a valuable paper from Mitchell King, of Charleston, on the production of Olives at the South. We beg to append to it the following:

We took occasion, some two years ago, to suggest to our horticulturists that the olive tree would thrive well in this region. Subsequent observation has served to strengthen the opinion, that the culture would prove easy and profitable. Indeed, there is scarcely any force, we think, in the common objection urged, that our climate is too variable, and exhibiting at times too great an extreme of cold. The chief objection, we apprehend, is the long period that must elapse before a tree would come into bearing. Some people cannot bear the idea of waiting ten or a dozen years for returns for their labor, and the notion of planting that others may reap never enters their heads. Now and then, however, we find an exception to this selfish rule, and we trust we shall be pardoned for referring to a case within our own knowledge. Our friend, John Stuardi, now well stricken in years, paid a visit last summer to his native Italy. While there, he arranged for the shipment at a proper season of a great many fruit trees, shrubs, flower seeds, &c., and among them several good sized olive trees. They came out in due time, in good order, and were immediately planted out in his garden. They are now growing finely, and he expects that within three years at farthest to see them in bearing. His success, of which he is confident, may induce others to follow his example. Our children, may, therefore, see flourishing olive groves in and about Mobile.

The following history of the olive, taken fram Phillips' "Companion for the Orchard," will interest the reader.

The olive tree is said to have been transported from Egypt into Attica by the care of Cecrops, about one thousand five hundred and fifty-six years before the Christian era. In the fabulous histories of Greece, we are informed that the gods having been called on to settle a dispute between Neptune and Minerva, arising from the desire of each of them to give name to the new city Cecrops; they determined to give the preference to the one who should produce the most beneficial gift to mankind. Neptune, striking the ground with his trident, created a horse; but Minerva, by causing an olive tree to spring from the earth, gained her point; and from her the city was called Athenæ, now Athens; since the olive, the emblem of peace or agriculture, was much preferable to the horse, the symbol of war and bloodshed. Minerva and the Graces are also represented as crowned with olive branches.

A contribution of olives was given by all the Grecians who attended the Panathenæa, a festival held at Athens in honor of Minerva. Those who excelled in any of the games during this festival, were crowned with a wreath of olives, which grew in the grove at Academus, a place near the city, with spacious and shady walks, belonging to a man of that name. Plato having here opened a school of philosophy, all places of learning have been since called Academies.

As to the soil of the olive tree, we may conclude, from several passages in scripture, that it grew naturally in Syria; but particularly near Jerusalem, if we may judge by the Mount of Olives, so often mentioned in the New Testament. It was first planted in Italy, in the thirteenth year of the reign of Servius Tullius, the sixth king of Rome.

The olive seems to have been highly appreciated by the Romans; as Pliny says, except the vine, there is not a tree bearing fruit of so great account as the olive. "Fenestella informs us," says this author, "that during the reign of Tarquinius Priscus, which was about the 183d year from the foundation of Rome, there were no olive trees either in Italy, Spain, or Africa, which is a strong presumption that they grew originally only in Syria." Theophrastus states, that in the 440th year of the city, there were no olive trees in Italy, but on the coast, and within forty miles of the sea; but Pliny says, in his time they were to be found of the very heart of Spain and France, but that the olives of Syria, although smaller,

produced the best oil. Virgil mentions but three kinds of olives; Columella mentions ten varieties, but says he believes they were much more numerous. The olive tree is cultivated with great assiduity by the peasants on the banks of the river Kizilasan in Persia.

The olive tree was first introduced into England in the year 1570; but there is little inducement for us to cultivate it, since it is by no means handsome, and we have no desire for its ripe fruit. Besides, the climate in general is not sufficiently warm to assure us of a crop, though we have no doubt but it would flourish in many situations on the south side of the Sussex Downs, where the fig tree thrives; indeed, in some parts of Devonshire it is found as a standard tree, and is seldom injured by the frost.

Several olive trees were planted against a warm wall at Camden House, Kensington, which succeeded very well till their tops advanced above the wall; after which they were generally cut down to the top of the wall in winter. These, in 1719, produced a good quantity of fruit, which grew so large as to be fit for pickling.

According to Columella, this tree flourishes best in dry hills that are full of white clay; for in moist and fat fields it produces plenty of leaves, but no fruit. Though this author contradicts the opinion, that the olive will not grow sixty miles from the sea, he states, that where an oak has stood it cannot be raised.

The olive tree requires but little care in the cultivation, but it seldom produces fruit oftener than once in two years. Signor Battiloro describes a singular variety of olive tree, which deviates so much from the general habit of the tree, that it produces four or five crops of fruit in the year, according to the temperature of the season, the olives being small and black, but affording delicious oil. The same intelligent observer has related the following anecdote:

"Francesco Longuana, a person known in Italy by his proficiency in literature, happening one day to converse with me concerning the olive tree, mentioned, that he had read in the writings of an ancient Greek author, whose name had escaped his recollection, that in the city of Coriolanum, near that of Venasso, there was an olive tree which put forth blossoms every month, and that this Greek noticed the circumstance as a prodigy. That city, at present a village, called Ciurnalo, being at a little distance from my castle, I repaired to it for the purpose of tracing, if possible, the remains of such a tree; and fortunately, owing to the kind attention of the priest, I actually encountered five of them; and on returning to the same spot in September, I found on them four different kinds of olives, and the recent blossoms of a fifth crop. The inhabitants call them *Olive d' ogni mese*."

This fruit the modern Greeks, during Lent, eat in its ripe state, without any preparation but a little pepper or salt and oil.

The sweet olives in the south of Italy are of a large size, and eaten annually in October, when pulled from the trees; or if neglected by the inhabitants they are greedily devoured by birds.

We receive the olive from the south of France, from Spain and Portugal, pickled in the following manner: it is gathered unripe, and suffered to steep in water some days, and afterwards put into a ley of water and barilla, or kali, with the ashes of olive stones calcined, or with lime. It is then bottled or barrelled with salt and water, and in this state do we meet with it at the desserts of our most wealthy tables, where fashion has done much in having introduced and given a fondness for olives, which seems to be an acquired taste; however, they are grateful to the stomach, and are considered good to promote digestion and appetite.

But olives are chiefly cultivated for the sake of the oil they produce, which is not only a profitable article of commerce, but forms a principal one of food to the inhabitants of the places where these trees are found. This oil is contained in the pulp only, whereas other fruits have it in the nut or kernel. It is obtained by simple pressure, in the following manner: the olives are first bruised by a mill-stone, and afterwards put into the trough of a press, which, by means of turning a strong screw, forces all the liquor out, which is called *virgin oil*. A coarser kind is obtained afterwards, by adding hot water to the bruised fruit.

Oil is the main support of commerce in some provinces of Italy. It forms

the great trade of Gallipolitans. It appears by the books of their custom-house, that in 1766, eleven thousand four hundred and fifty-nine salme were shipped off for national markets, and thirty-four thousand four hundred and ninety-three salme for foreign ones. This quantity cannot be valued at less than a million of ducats. The exportation of oil brings into Calabria-ultra half a million of ducats annually.

The olive tree is attended to with the nicest care near Naples, and no trouble spared to increase its fruitfulness, or revive prolific vigor in plants that begin to feel the decay of age; at one time they manure or water the roots; in winter the peasants bare the roots of the old trees, laying upon them a thin coat of litter, and leave them thus, during four months, to imbibe the restorative salts of the atmosphere. Few of them have any principal bole; for all predominant shoots are early cut out, that every part may derive equal benefit from the influence of the sun. The fruit in some places is suffered to hang till it falls through ripeness.

Aristæus, son of Apollo by Cyrene, was regarded as a rural deity for having taught mankind to extract olive oil, and also make honey, cheese, and butter. The wrestlers were anointed with it; and it was made a substitute for butter, which among the Romans was used as a medicine.

We find in the book of Leviticus, that oil formed a principal part of the meat offerings which the Israelites presented to the Lord.

Pliny informs us, that in the 500th year of the city, when Appius Claudius and Lucius Junius were consuls together, a pound of oil was sold for twelve asses; but that in the year 680, ten pounds of oil sold for an ass, and that, in twenty-two years after that time, Italy was able to furnish the provinces with oil; and it was much used at their baths, having, as they supposed, the property of warming the body, and defending it against the cold.

The best olive oil at present is obtained from Provence.

Although the greater number of the English eat but very little olive oil, yet oil in some shape forms a considerable part of our food, both animal and vegetable, and affords much nourishment; but with some, oily substances do not unite with the contents of the stomach, especially where acids abound.

Dr. A. Hunter was decidedly of opinion that all plants receive their principal nourishment from oily particles incorporated with water by means of an alkaline salt, or absorbent earth. Until oil is made miscible, it is unable to enter the radical vessels of vegetables; and on that account Providence has bountifully supplied all natural soils with chalky or other absorbent particles.

Olive oil is esteemed good for the breast and lungs; it tempers the sharp choleric humors in the bowels, is useful against all corrosive mineral poisons, as arsenic, &c.; it opens the urinary passages; and is good for the stone and gravel. Olive oil congeals at 38° of Fahrenheit.

The wood of the olive tree is used by cabinet-makers, from its being beautifully veined and admitting an excellent polish.

These trees may be obtained from those Italian houses which import orange trees; they require nearly the same treatment; but when they have taken good root they may be taken from the pots and planted in a warm situation.

2.—MUSQUITE GRASS.

Messrs. Editors,—I send you a small bundle of Texas or Musquite grass, grown on the farm of our neighbor, Mr. Henry C. Daniel. In an article published last year in the *Southern Cultivator*—this agricultural paper should be in the hands of every Mississippi planter—over the signature of J. W. Barnes, he says, there are several varieties of Musquite grass, as follows: Curly, running, feather, blue, block, and bearded, but the difference between them is so small that it is not worth mentioning. We find, says the writer, this grass growing in Texas spontaneously, as far south as latitude 28°, and as far north and west as the Grand Prairie above the cross-timbers, thus spreading over a country of more than 8°, but it seems to flourish best in the latitude from 28° to 32°; but

from the hardiness of its nature, I am led to believe that it will grow in almost any latitude of extreme cold. Unlike the Bermuda, this grass is easily killed by turning it over in winter with a common Cary plow. Some farmers in western and northern Texas succeed well in making a crop with no other food but Musquite grass. This grass you will perceive, Messrs. Editors, is as well seeded as the Timothy, and therefore must be highly nutritious—the fibre of the stalk is delicate and fine. I am confident, that upon a soil adapted to its production, two or more tons to the acre may be grown. If, then, we have a rich nutritious grass that can be successfully and profitably raised in Mississippi, will not our planters appropriate a few of their acres to its culture? Our citizens annually make large outlays for northern hay, but wherefore should we do this when we can raise it at home? I hope your old correspondents, Caleb Quotem and Dr. Phillips, will favor us with their views on the adaptation of our climate and soil to the production of Musquite grass. Your obedient servant,

YEOMAN OF HINDS.

3.—SUGAR-REFINING.

One of our New-York contemporaries speaks of a newly-invented process for refining, or cleaning sugar, which is about to be employed in one of the refining establishments of that city. The sugar, mixed with molasses until it has a semi-fluid consistency, is thrown into a revolving sieve, with meshes so close as to confine the grains of sugar, while it permits the molasses to escape; and the sieve being revolved with prodigious velocity—two thousand revolutions a minute—the molasses is driven out by the centrifugal force, leaving the sugar behind, clear, white, and it is said, perfectly dry, resembling what is called refined brown sugar, and needing but one more operation to convert it into the loaf. The sieve refined two hundred pounds at a time, and in the short space, we are told, of two minutes.

4.—SOMETHING FOR THE SOUTH.

Lieut. Porter, of the navy, has presented to the editors of the *National Intelligencer*, for distribution, a variety of seeds of plants from the Mediterranean. Among them is the pistechio nut, which is used for the manufacture of a valuable dye and oil, and for several other purposes of commerce. In a note Lieut. Porter says: "I think the climate of Georgia, Louisiana, South and North Carolina, Texas, Mississippi, and several other of the Southern States, is well adapted for the propagation of this tree. Should any one be successful in raising and bringing the tree to perfection in any considerable numbers, they will find the sale of the nut a lucrative business. The lasting melon of Naples can be kept good one year merely by hanging it up in a cool and dry place. The Oriental cypress is the ornamental tree of all Eastern cemeteries, and begins to assume that place in European cemeteries."

5.—THE NEXT PATENT REPORT.

Although Mr. Ewbank has not yet favored the world with the first volume of his agricultural statistics, owing to the wretched system of government printing, we believe, he has yet issued a circular for a new one. We publish cheerfully from the circular he sends us, those queries which relate peculiarly to Louisiana and the South-West.

COTTON.

Average yield of clean cotton per acre—cost of production per lb.—what crops best grown in rotation with cotton—best preventives against rust, army and boll worms—how deep do you usually plow for this crop; have you any experience in sub-soiling, or deep tillage for cotton—your experience in the use of cottop-seed as a fertilizer—how can cotton lands best be improved without resting them?

SUGAR-CANE.

Is the cane losing its vital force, and becoming more subject to premature decay than formerly—should not the seeds in place of rattoons be occasionally

planted to produce new and healthier varieties—can you suggest any improvement in cultivation of the cane, or the manufacture of sugar—cost of producing sugar per lb. ?

RICE.

Can rice be successfully cultivated on upland—do you know of any varieties decidedly superior to others which deserve increased attention—can you suggest any improvement in the management of rice plantations ?

TOBACCO.

Average yield per acre—cost of production per cwt. or hhd.—describe any new process of cultivation or curing—crops best grown in rotation to maintain the fertility of tobacco-land ?

HEMP.

Is the culture of hemp on the increase or decrease—describe any new process of culture or preparation for market—average yield per acre—cost of production per pound ?

DEPARTMENT OF MANUFACTURES.

1.—SOUTHERN GRANITE, No. 4.*

According to estimates made by scientific architects here, who are familiar with the general plans of construction proposed for the new Custom House, the quantity of granite necessary for its erection will be certainly not less than 15,000 tons. If many columns are introduced, and stone used to a more considerable extent than is now anticipated, it may require 18,000 tons, or even more.

It has already been determined that the building will be 300 feet in length, and 200 feet in width—thus giving a belt of 1,000 feet. The basement, and the two stories above it, with the cornices and parapet, will be, probably, at least 60 feet in height. We have then an outside superfices above ground of 60,000 square feet. But the foundations and cross walls, which must be of considerable thickness, the steps, and paving, will consume a vast quantity of stone—sufficient to warrant us in assuming 15,000 tons as a basis of calculation. A square foot of granite is usually estimated at 155 pounds in the calculation of builders ; though the various species of granite vary somewhat in specific gravity. This then is equivalent to 216,774 cubic feet. We will assume the price of the granite at 45 cents per foot—the freight at $2½ per ton—and the cost of hammering it at 45 cents per superficial foot. The measurement of the hammered superfices is estimated by competent persons here, at not less than 150,000 square feet.

With these data, and without entering into any computation of the amount of workmanship, and the value of the ornamental parts of the building—such as the columns with their caps and bases, the pediments, and other embellishments, we arrived at the following statement :

15,000 tons, equivalent to 216,774 square feet, at 45 cents	$97,548 30
15,000 tons freight, at $2½	37,500 00
150,000 superficial feet, hammering at 45 cents	67,500 00
	$202,548 30

This gives an aggregate cost, which does not vary materially from our original estimate. We will now direct attention to two of our items of calculation, viz. : the price of the granite, and the cost of hammering it. Forty-five cents per foot for granite delivered on shipboard is a low price, even for large contracts. The

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* Concluded from October Number.

latest offer for furnishing granite on a large scale that has come under our observation, is that for the Smithsonian Institute building at Washington. The granite in this case was to be obtained in Maryland, on the line of the Baltimore and Ohio Rail-road. The granites with which we are likely to come into competition, will be those of Massachusetts or Maine, as from those points it can be conveyed by sea to Charleston at less expense than from any other quarries, unless it be from those in South Carolina. The granites from Maine, however, are not in much esteem—being generally of whitish appearance, and objectionable on other accounts. The Quincy granite is much admired on account of its color, and the superior capacity which it is said to possess of resistance to the action of fire; but on this account, as well as the extra cost of working it, it usually commands about 10 per cent. more than the other sorts of New-England granite. This very circumstance, which renders it necessary for the quarriers of it to charge that difference in order to realize to themselves the same net profit, makes it also more expensive to work, as, in consequence of its tenacity, it cannot be wrought at the same cost as some other granites which are equally desirable for building purposes. We have instituted comparisons with particular reference to the Quincy quarries, because they are amongst the most eligible in situation for the shipment of stone to the Southern states.

When large contracts are made for hammering granite, it is seldom the case that the price falls below the cost of the granite delivered on the spot where it is to be used. Forty-five cents per superficial foot is the lowest rate that we have heard of. Those who may contemplate engaging in this enterprize in Columbia, need not be over careful to investigate the cost of hammering the granite, as, from whatever source the granite for the Custom House may be obtained, it is certain that it will be hammered on the spot which the building will occupy; but we make these observations respecting this item, and fix the probable rate of charge, in order to verify the estimate we have made of the entire cost of granite for the building. If it is prepared for use abroad, it will not only require to be cased with strips of wood, secured by hoops of iron, in order to protect the edges from injury, but, in consequence of the necessity of more careful handling on shipboard, as well as receiving and discharging it, it will superinduce the payment of extra freight—which extra charges would also pertain to the conveyance of it by rail-road.

It is quite possible that the columns and cornices and other ornamental parts of the building, which will be of such high cost as to render the difference of freight, and the extra cost of casing, but small in proportion to their value, may may be wrought at the quarries, and in such case, indeed, it is highly important to ascertain whether we can hammer and work up stone as cheaply as at the North. For the reasons already assigned, we see no obstacle to our doing it even cheaper. Labor can be had at as low rates or lower—subsistence is cheaper—the climate and temperature are such as to admit of uninterrupted operations at all seasons—and the granites we have may be worked with much less labor, it being recollected that some of those described by Professor Tuomey yield very readily to the chisel, whilst they at the same time possess the beauty and durability desirable for building materials. It must be borne in mind that Northern shipments of granites to the South are burthened with wharfage at both ends of the sea route, and marine insurance, which will certainly amount to more than the cost of hauling from the rail-road depot in Charleston to any point within the city.

We have now presented to the consideration of the reader almost every item to be taken into account in demonstrating our ability to furnish stone of good quality, at the lowest price, for the new Custom-house; and we hope we have succeeded in placing the matter in a sufficiently favorable aspect to induce the commencement of the business. The site already purchased for the building, (Fitzsimon's Wharves,) is now under lease for nearly three years from the present time. It is a valuable lease, and as it is altogether unlikely that the Government will purchase it, we may presume that no Granite will be wanted on the spot, for use, for nearly three years to come; but let not this fact cause any one to slumber who wishes to secure the contract. The Commissioners are now advertising for offers—the plans for the buildings will be definitively de-

termined upon in February next, and although the offers for stone are now called for probably not so much with a view of closing a contract for it as to fix upon the kind of stone to be used; yet such preliminaries may soon be entered into as will ultimately give direction to the contract for the stone. So let your Columbia quarriers be on the look out—they may depend upon fair play so far as the Commissioners are concerned. Boston has been allowed to build her Custom-House of Granite—and New-York of Marble, both of them at enormous cost; but no doubt when Charleston is considered, economy will be the order of the day, and efforts will be made in some quarters to find for us a cheaper stone. But let us stand up for Carolina Granite. If suitable efforts are made by our Representatives in Congress—using their influence with the Secretary of the Treasury, by the Commissioners, and by our own citizens, it will be accorded to us; and if we succeed, it will form an era in our industrial history. As it may not be uninteresting to state the cost of some of the principal public buildings in this country, we make some quotations, touching this point, from the valuable work put forth by the Hon. Robert Dale Owen, Chairman of the Building Committee of the Smithsonian Institute, and to which we beg to refer enquirers for much of valuable information on the topics which we have brought to their notice. Of the public buildings in Washington and elsewhere, he reckons the cost as follows: "The Capitol (which is built of Sandstone from Acquia Creek, Virginia,) including the cost of re-building after its partial destruction in 1814, and the laying out of its grounds, $2,659,573—the Treasury building, of the same material, $648,743—the Patent Office, of the same, $417,550—the General Post Office, of Marble from New-York, $452,765—the New-York Custom-House, of Marble, $960,000—the Boston Custom-House, of Granite, $776,000, not including the price of the lot, nor the very heavy cost incurred in preparing for the stone foundations—these two items amounting to $300,000, and making the total cost $1,076,000. The two porticoes and dome of this building, cost, according to the statement of the architect, $240,000. The United States Bank building (now the Custom-House,) in Philadelphia, of Marble, cost $257,452—the Girard College, of Marble, $1,427,800; Trinity Church in New-York, of new red Sandstone, about $338,000, of which about one-third was expended on its tower and spire. The Smithsonian buildings, of the same, will be about $215,000."

And now what is wanting to set this Granite ball in motion in Richland? Is it capital? It can be easily obtained—we are ready to embark in it here. A company can easily be formed, if private individuals are unwilling to go into it alone. The approaching Session of the Legislature will bring to your town many who will join you, if it is desired, and you will bring the matter to their notice. Let then the effort be made, and if other sufficient motives cannot be found for entering into this promising enterprise, on a large scale, with the determination to make a trial of what can be done in this way, let those monuments of our shame—the Capitol Gate Posts—transported by sea and land, from *Northern Quarries*, to your inland town, whose foundation is Granite, arouse within us a determined spirit of enterprize. It is high time that we should disencumber ourselves of that vile lethargy which causes us to be so miserably dependant upon foreign skill and enterprize.

To one other subject we desire to invite attention—the recognized mode of measuring granite. It will be seen, on reference to Shaw's work, that at a convention of stone quarriers held in Boston some years ago, certain rules of measurement were adopted, and which, we believe, are still adhered to. These measurements relate to hammered and chiseled granite. They should be familiar to those engaging in the business. And now as to the quarrying of granite. "Any attempt to recount the history of the art, (says Burgoyne) "would oblige us to extend our retrospect to a very early date, perhaps we should say to a dateless period—to call to mind the structural wonders of Tyre, Sidon, and of Thebes; and to close history with the confession that, however the mechanical modes of wielding the wrought masses may have received improvement in modern times, the primitive methods and tools of the quarrymen and of the mason have, if we except the introduction of gunpowder, become no more altered in our hands than have the chiselled works of the ancient sculp-

tors been surpassed by the productions of later years. The implements employed for quarrying by mere manual labor are simply the sledge hammer or mallet, the borer or chisel, and the wedges, besides trucks, such gearing as may be required to facilitate the removal of the blocks when detached. Of these, the only one which needs any description is the chisel, which is an iron rod with a steel cutting end, welded at one extremity and flattened to a wedge-like form on the other. The implements used in blasting are of a similarly simple character, and consist of the borer or jumping tool, the scraper for clearing the hole of the chips produced, the claying bar for driving in dry clay if the hole be too damp for the immediate introduction of the charge, the needle, which is driven into the charge, and remains while the hole is filled up with stones, &c., so that, when ultimately withdrawn, a channel is preserved communicating directly with the powder. While the needle, which is a long, thin copper rod, remains in its place, the space around it is filled up, by means of the tramping-bar, with stones, &c." It is a singular fact that some of the most recently introduced improvements in quarrying and boring, which were brought from the mines of Germany as novelties, were in use, as has been lately ascertained, centuries ago in China.

Finally, let us see what will be *done*—not talked about—in this matter of furnishing granite for the new Custom House.

Let the business of quarrying be but begun, on a large scale, and with good management, it must succeed and prove very profitable. There will be no lacking of demand for the stone. We must before long have at least a new State House in Columbia, for the miserable old barn which now annually encloses the assembled wisdom of the State, is utterly unworthy for the purpose. Hopefully will we wait further developments.

2.—SOUTHERN MANUFACTURES.

The following article from the *Louisville Journal* will lead to very interesting reflections in the minds of the thoughtful:

THE PROGRESS OF THE COTTON MANUFACTURE SOUTH AND WEST.

It is now but a few years since public attention was called to the vast natural advantages at various points in the valley of the Mississippi, for the manufacture of the great staple of that valley. The essays and discussions on the subject that have appeared in this and other journals, have satisfied every reading and thinking man in the country that the chief seats of cotton manufacture are to be on and near the cotton and wheat fields. Already we see indications of the results of these opinions in the condition of the Eastern mills. In a few years more English capitalists and operatives will have ascertained our superior advantages, and the mills of Glasgow and Manchester will be gradually stopped, preparatory to a removal of money, men and machinery, to points within our limits, where more can be effected by the force of each.

We ask the attentive consideration of the reader to the following extract from an able editorial in the last *Dry Goods Reporter:*

"At the present moment, among the producers of cloth in those sections—namely, the Northern and Middle States—which have hitherto been regarded as the chief seats of manufacturing industry, there appears to be, and doubtless is, something less of that prosperity which, upon an average, throughout the whole country, is unusually marked; the value of raw materials has risen disproportionately to the price of fabrics, and, although the demand for the latter is good, the supply is more than equal to it. That is to say, notwithstanding the raw material is very high, and manufacturers complain of inadequate prices, they nevertheless buy and work up a larger quantity of raw material than ever before, in the face of enhanced exportations of rival productions. This is an anomaly which puzzles many; but, if we reflect upon the causes which are in operation to stimulate competition, we arrive at something like a solution.

"We may reflect that political causes in Europe have operated to keep goods cheap in Lancastershire, and by doing so, to promote large exports to this side of the Atlantic at a moment when more incentives to manufacturing rivalry have acted upon the South and West. These are, first, abundance of capital; second, the influence of the improvements in steam-power and machinery, emancipating factory-labor from water-power localities; and lastly, political motives.

"The South has abundance of capital, evinced in the fact that the crop thus far delivered, say 2,000,000 bales, has realized $104,000,000, against $80,000,000 for 2,620,000 bales last year; that is to say, a quantity diminished by one-fourth, lessening to the same extent the expenses of freight, packing, weighing, &c., while rates of exchange are high, drawn against high values, has enabled the South, as a whole, probably to realize $30,000,000 more money from this crop than from the last. With these means, factories have so multiplied, that not short of 175,000 spindles are now in operation in the cotton States, requiring 100,000 bales of cotton per annum, and every mail brings advices of some new one going up. This rivalry affects the old-established factories far more; as new factories are all armed with the newest improved machinery, and will produce at probably 20 per cent. better advantage. The competition from this quarter is every way calculated to diminish the old margin between the cost of raw material and that of fabrics. Therefore, those old consumers who had reached the minimum margin at which they could work, must give up shop, and give place to more competent operators."

The editor of that paper has been a merchant, and cotton manufacturer. There is no better authority on this subject.

Here we see an excess of $30,000,000 as the product of the cotton crop of 1849–'50 over that of 1848–'49. This thirty millions of dollars would put up at home, and equip enough mills to change from five to six hundred thousand bales of cotton into coarse cotton cloth. Most of the money would be spent at home for labor and materials, and would consequently be re-producing cotton mills. The South can spare this thirty millions of dollars every year, and instead of feeling a loss and deficiency of capital, would feel the stimulating influences of a seductive home-employed capital. In ten years, the savings in carrying cotton cloth, and food for the cotton cloth-makers in unnatural directions about the world, would build and equip cotton mills enough to consume our entire crop, and we should then have a monopoly of cotton cloth as well as of raw cotton.

The people of the South would then be busy at home instead of running off to California. The stream of Pactolus would then run by their very doors, and they would find its golden sands richer than those under the Sacramento.

The reader will not fail to note what is stated in the extract above about the greater efficiency of new cotton machinery. Twenty per cent. advantage is enormous.

The Eastern mills have now the advantage of our own only in system. This we can, and shall soon obtain, and then we shall hear no home croakings and sneers about the profitableness or advantages of home cotton mills.

DEPARTMENT OF INTERNAL IMPROVEMENT.

1.—TEHUANTEPEC RAIL-ROAD.

MOVEMENT IN NEW-ORLEANS.

At a meeting of the Committee, Mr. Benjamin stated that at the last meeting of the Committee, a sub-Committee was appointed to prepare an address to the people of the United States, soliciting aid in the Tehuantepec enterprise, of which Committee he (Mr. Benjamin) was appointed Chairman. The Committee had not yet been able to prepare the address, but he had drawn up a report, comprising a considerable amount of information to the citizens of New-Orleans, which had not yet been laid before them.

Mr. Benjamin then read his report, which is very voluminous, and highly in-

teresting. It is very ably drawn up, and contains a large number of important facts, with which we were previously unacquainted. It fully explains the nature and advantages of the original grant, for the right of way across the Isthmus of Tehuantepec, and the transfer of all these rights and privileges to the trustees of the permanent Committee in New-Orleans, with power to make a transfer of them to a company as soon as one is formed. The articles of agreement with Mr. Hargous are all given.

The report was adopted, and Mr. Benjamin stated that all difficulties and doubts in regard to the enterprise were removed, and that it only remained for the citizens of New-Orleans to act. The disposal of the lands along the route, continued Mr. B., will in time more than pay for the road, and the work will commence paying as soon as the company organizes. The company can immediately start a communication across, by means of mules and carriages, and a considerable portion of the California travel can be secured at once. The towns which will spring up at each end of the road will be the property of the company, and the sale of lots will produce a large sum of money.

Mr. Benjamin stated that it was necessary to raise some twenty or thirty thousand dollars for present uses in making surveys, &c.

It was moved that the committee open an office for the purpose of receiving subscriptions to the stock of the company, which was now sure to be organized. Subscribers are to pay in five per cent. on the amount subscribed, the same to be credited to them when the books of the company are opened. The motion prevailed.

Mr. Mathews offered a resolution, appointing a committee of twenty citizens to wait on the Governor, and solicit him to call an extra session of the Legislature immediately, with a view of having the general corporation laws altered, and a charter given to the company. The resolution was adopted.

It was moved that a committee of ten citizens be appointed to draft a memorial and obtain the signatures of all our citizens, praying for an extra session of the Legislature. The memorial is to be carried up by the committee of twenty, and presented to the Governor. The motion was adopted.

The privileges obtained from the grantees of the Mexican Government consist:

1. Of the exclusive right of establishing a communication by steam across the Isthmus of Tehuantepec by the canals and rail-roads, or improvement of natural water courses. The right is granted for sixty years.

2. Of a grant in fee-simple of ten leagues of land on each side of the line of communication, making about five millions of acres.

3. Of exemption from any contributions or taxes on travelers or merchandise in transitu, for a term of fifty years; and exemption from transport duty, freights, lighterage, tonnage, or any other class of dues.

4. Of the right to foreigners to acquire real property and exercise any trade or calling, even mining, within fifty leagues on either side of the line of transit.

5. Of an exemption from all duty on agricultural implements, and implements for the arts, for twenty years; and on all articles of subsistence, clothing, furniture, and other things useful for the construction and embellishment of houses, for six years from the establishment of the colony.

6. Of making all works necessary for shelter and use, fortresses and warehouses, in two ports, one at each end of the line, to be selected by the grantee.

The grant of the above privileges was originally made to Jose Garay, by whom it was subsequently conveyed to Mr. Hargous of this city. This committee have obtained a conditional release from Mr. Hargous, of which the following is an outline:—

1. Mr. Hargous secures to the citizens of New-Orleans a preference in carrying out the enterprise, and give them two years within which to organise a company for that purpose.

2. To prevent the possibility of any different disposal of the grant in the interval, Mr. Hargous makes conveyance of it to the trustees who are authorized to convey it to the contemplated company, if formed within the limit of the last two years. At the end of that time the trustees were to convey it back to Mr. Hargous, if there should be a failure of organization.

3. Mr. Hargous chooses for trustees persons who are citizens of New-Orleans, and who should be approved by the committee.

4. Mr. Hargous is to receive for his privileges, lands, &c., one-third of the stock of the contemplated company, not, however, to exceed three millions of dollars. For this purpose it is assumed that it would cost about $6,000,000 to carry out the work. The capital proposed was therefore fixed at $6,000,000; one-third for Mr. Hargous and two-thirds for subscribers.

But it was also provided that if the work could be done for less than $6,000,000, Mr. Hargous was to have shares to the amount of only one-half of the real cost, so as to be entitled to one-third of the whole number of shares and no more. If the estimated cost of $6,000,000 were exceeded, then any further sum required was to be raised by loan, and Mr. Hargous' shares were to bear one-third of the burden of the loan, so as on all occasions and in any event to keep unimpaired the original proportion agreed on, viz. :—one-third for Mr. Hargous, and two-thirds for subscribers.

5. Mr. Hargous was to be reimbursed for his advance of half a million, but instead of cash he was to receive only one-fourth of it when the company should be actually organized, and the remainder in one, two, and three years from that date.

Pursuant to these agreements a deed of trust of the privileges possessed by Mr. Hargous has been executed to the following gentlemen, viz. :—Peter Conrey, Jr., Leonard Mathews, J. P. Benjamin, S. J. Peters, J. M. Lapeyre, and Bernard Fallon, and the control of the enterprise of a Tehuantepec railway is now vested in the City of New-Orleans, for a term which will expire on the 2d day of May, A. D. 1852.

In relation to the depth of the water at the mouth of the Coatzacalcoas the report says, that careful surveys show that the mouth of the river has "fourteen and a half feet depth at low water, for a width of fifty feet, and that the water gradually shoals on each side of this pass to thirteen and twelve and a half feet, which latter depth is maintained through a pass 350 feet wide. This bar, moreover, is of rock, and only eighty feet thick, admitting easily of being deepened, if necessary. But its present depth is entirely sufficient for a large class of steamships, and all doubt is now removed on the gulf shore."

Major Barnard, to whom was entrusted the examination of the harbor on the Pacific coast, reported to the committee that he considered himself warranted in assuring them that the entire enterprise was feasible, provided a harbor could be found on the Pacific coast. He had also suggested his impression that the roadstead on the Pacific coast would suffice for all commercial purposes, even if no harbor could be found. The committee have now the satisfaction to report that this impression has been confirmed since Maj. Barnard left for New-York, where he has made arrangements for the survey, as shown by the following extract of a letter to the committee, dated on the 29th of September, 1850 :

"I was well aware, and represented the fact to you, that a large part of our intercourse with Mexico during the war was carried on in this very way, in face of the violent northers which prevail in the gulf. Also, that steamers enter no harbor at Chagres, but lay off as unprotected as they would be at Tehuantepec, and that even at Panama they lay out in an open gulf. I could not feel much doubt about the matter, therefore; yet, not being a seaman, I could not speak with the confidence which professional knowledge would have given me. Since that time I have consulted several naval officers well qualified to give an opinion on the subject. Among others, Capt. Porter, of the Georgia; Lieut. Maury, of Washington, and Lieut. Radford, who has coasted along the shores of the gulf of Tehuantepec. They all, without any hesitation or qualification, express their belief in the practicability of the matter. Capt. Porter thinks that it is a better place than Chagres for steamers to touch, as the strong winds (and in this they all agree) are off the land."

LITERARY AND EDITORIAL DEPARTMENT.

1.—POPOCATEPETL.

AN EXCURSION TO THE HEIGHTS OF POPOCATEPETL.

THE following paper, prepared by Edward Thornton, Esq., attache to the British Legation in Mexico, has been kindly furnished us through our esteemed fellow-citizen, E. J. Forstall, now in that city. It is full of interest and novelty, and we could wish our citizens were more disposed to familiarize themselves with Mexican scenery by actual travel than they now are. We should like for a little while to reverse the interminable *northward* travel, and think that there are quite inducements enough to do so.—(ED.)

ON the 18th May, 1850, a party of eight of us started from Mexico with the determination of attempting the ascent of Popocatepetl. We consisted of three Englishmen, one Russian, two Spaniards and two Mexicans. The Russian and one of the Mexicans had come from Puebla to join our party. My two English companions and the Russian were men whom I was well acquainted with, and in whose endurance and energy I had full confidence. To improve, however, our natural strength, we went into regular training about three weeks before the day fixed for our expedition, taking walks of from sixteen to twenty miles a day, much to the astonishment of the Mexicans, whose apathetic souls could not imagine what could be the meaning or object of our rapid wanderings to and fro. With much difficulty I was enabled to procure an excellent English barometer of Carey's, besides which, I provided myself with two good thermometers, and a couple of tubes for the purpose of boiling water, in order to take the height of the mountain both by the barometer and by the degrees of the thermometer at boiling-water point.

The first eleven leagues of our journey was performed by diligence to Miraflores, a cotton-weaving manufactory, directed by a Scotchman, who gave us a most excellent breakfast, which we perhaps enjoyed the more from the conviction that we should certainly get nothing so good during the rest of our expedition. To this place we had sent on our horses, which we now mounted, and continued our journey to the hacienda, or farm of Tamariz, about five leagues farther, where we were to pass the night. For beds we were not at a loss; for each man had brought his own, mine consisting of a buffalo skin and a sheepskin overcoat, which is the bed I have generally carried about with me in traveling on horseback in this country, and on which I have sometimes slept very soundly. Here, however, I was not quite so fortunate, either from the constant passing and repassing of people through our room, or from the almost feverish anxiety I felt as to the possibility of our accomplishing the ascent of the mountain. Indeed, before we left Mexico, there had been so much rain, which of course had fallen in snow on the mountain, that our friends had made a joke of our attempting the ascent, and our own eyes convinced us that the snow had seldom been so low. The owner of the estate of Tamariz, who had himself succeeded in reaching the top of Popocatepetl on five different occasions, now gave his decided opinion, that we should be unable to get up at this season, and that we had at least better wait a day at his house with the hope of some of the snow melting, and to give him time to procure the necessary guides. The innate love of delay of the Mexicans is proverbial; I never have had the good fortune to see any people who could endure remaining so long at one time without any employment whatever, even, I believe, of their imagination. I question much whether the silent and solitary system would have half the effect upon them that it has upon the more energetic and impatient minds of the North. We therefore determined to resist this propensity to inaction, and insisted upon moving onwards. At 7 o'clock on the morning of the 19th, we were on horseback, and went to Amecamee, a large village about a mile from Tamariz, where we waited some time, while some of our companions went to mass, others procured a guide, and we, true Englishmen, brought some beef for making beefsteaks, for fear our stock of provisions

might run short in case we might have to wait some days before we could get up the mountain. The guide we obtained here was the man who first descended the crater of Popocatepetl without any assistance but that of a stick; and now that I have seen the crater myself, I cannot but confess that it was a bold undertaking. Our road now began to ascend rapidly, and was reduced to a mountain-path through the most magnificent woods of spruce, fir and cedar. We soon agreed, that even if we were disappointed in the main object of our expedition, the delightful sensation we felt from the freshness of the air, and the perfume of the woods, and the grandly picturesque and ever-varying views of the broken sides of the mountain, and of the cultivated plain beneath, amply repaid us for the trouble we had taken. At every step Popocatepetl became more majestic, and our reverence for Ixtaisihuatl as rapidly diminished, though from Mexico both appear to be about the same size, the "White Lady" being much nearer than its loftier neighbor. After going on this way for about five leagues, and crossing some hills with little more than a scanty pasture for the cattle which wandered over them, we came upon a wood whose peculiar and strange character told us that we were close to the limits of vegetation. The trees, though generally large, were all of them more or less damaged by the lightning and wind; some with branches torn off, others split from top to bottom, more torn up by the roots, so as constantly to obstruct the way, and others remaining mere bare poles without either branches or bark, melancholy remnants of former beauty. I would have given much to have seen a violent thunderstorm in this spot, for it seems that in descending from the mountain it is here they spend their first fury, as if rejoicing in having found something to destroy. The soil here was nothing but black ashes, evidently thrown out in former times from the crater. Fortunately for us, though it was raining a good deal, the nature of the soil prevented its becoming slippery, as is generally very much the case in the ordinary paths in this country.

In the midst of these ghosts of trees was the habitation in which we were destined to pass the night; it was no more than a shepherd's hut, mere poles laid together and the interstices more or less filled up with grass. As for our horses, we were obliged to leave them in the open air, having barely enough room for ourselves; they did not seem to suffer from it, nor were they touched by the wolves, who were howling about us during both the nights we passed there, but who were easily frightened away by a couple of shots I got up about midnight to fire in the air. We arrived at this place, dignified with the name of the "Rancho de Tlamacas," at about 3 o'clock in the afternoon; and while others were collecting wood to make a fire for the purpose of cooking some of the beefsteaks we had bought at Amecamee, I set up my barometer and found the height to be 12,582.08 English feet, or 3,809.8 metres, a greater height than I had ever yet passed two nights at. The thermometer at this place was 10° centigrade in the shade at 4, P. M. After having tolerably enjoyed such a dinner as we had, we held a council of war, and it was decided that we should start at three o'clock the next morning, in order to get to the summit of the mountain at an early hour. As it was now getting late, and again began to rain pretty heavily, we resolved to endeavor to get some sleep. As the hut at our principal head-quarters was small for so many people, the Russian, one of the Mexicans and myself, thought it more prudent to retreat to another not many yards distant, but not in such good repair; indeed, we found the rain and wind were penetrating in every direction; however, we put our India rubber cloaks upon the roof, and thus contrived to keep ourselves tolerably dry. A large fire was likewise made inside the hut, which, though it made our unaccustomed eyes weep most uncomfortably, somewhat tempered the coldness of the wind. It continued raining, and about half a mile higher up, snowing, till two o'clock in the morning of the 20th, so that none of us thought it worth while getting up till daylight, when my two friends and myself went to the lower hut, and found that the guides were bent upon persuading us that the ascent was impossible; they had already sent out two Indians to explore the road, and report upon its state, who, as I observed, would certainly pronounce it impracticable. They returned in a short time, saying that

the snow was from three to four feet deep. The guides, however, had obstinate subjects to deal with, and after much discussion and talking, it was determined we should make the attempt.

To my great joy we were ready to start, and on horseback, at a quarter before seven. I was armed with my barometer, two thermometers and two glass tubes,—carefully packed in tin cases, and a compass, besides some bread and meat strapped round my waist, and a flask of water. I carried about fourteen pounds weight more than the rest of the party, which in climbing a mountain makes a most sensible difference. We were all provided with long sticks armed with iron points, which were made under my direction, such as those which have frequently done me good service in the Alps. For our eyes, of which we had been constantly warned to be particularly careful, I had goggles entirely covering the eye, made of very fine wire, which I found protected the eye as much as green spectacles, and kept it cooler from the ventilation they allowed. This was all I had, but the rest, besides spectacles or goggles, had black crape quadruple over their eyes, and double over the rest of their faces. Five minutes' more brought us on the snow; the ground was exceedingly heavy, partly from the snow, but principally from the deep sand or ashes with which the sides of the mountain are covered. My horse, which was a cross-breed, between a Mexican and American, and was unaccustomed to mountain climbing, soon began to blow so much that I took compassion upon him, dismounted, and took to steady walking, which soon took me ahead of the horses, who were constantly obliged to stop for breath. Another Englishman dismounted at the same moment, and soon after the third Englishman and the Russian. The remainder of the party continued a considerable distance on horseback, one or two of them pushing their horses almost cruelly; but they were accustomed to the work, and none of them suffered severely. One of the Mexicans,—finding his horse could not be persuaded to go so far as the rest, gave up the expedition, and went back. My first companion on foot, who was a much lighter man than myself, stepped over the snow without even breaking the crust, whilst I, with my greater weight and the additional weight I carried, sank deep into the snow and sand, naturally rendering my work much more fatiguing.

Our course was at first directed towards the east side of the mountain, where there was much less snow than on the north side, or that nearest to Mexico, so that in the beginning the ascent was very gradual. This direction gave us a constant view on our left of the valley of Puebla, where the snow-clad top of the Malinche was perfectly clear; the valley generally was covered with a mass of white clouds, which had all the appearance, seen from above, of the foaming waves of the sea. Overhead, all was clear. At about half way up, the three Englishmen and the Russian had got very considerably in advance of the rest, and our first guide (for there were two) declared that we must wait till the whole joined us. We, therefore, chose a point where there was little or no snow, lay down and availed ourselves of the opportunity to eat a little bread and meat. Our complaints, however, were bitter at being thus delayed, and we made many fruitless attempts to persuade the guide to move on. In an hour's time we were all assembled, and our first guide, a little piqued at our insinuations in our endeavors to make him go on, that he was tired, made a fresh start at a rapid pace and straight up the mountain, instead of in our former slanting direction. This sudden burst took me aback, and as it was over broken rocks, it was very inconvenient with my barometer slung over my shoulders, of which I was obliged to take great care. I now began to feel the weight so much, that I asked the guide whether he would carry the barometer, expecting to meet with a plump refusal; however, he was kind enough to take charge of it, and as he was always before me, I kept my eye upon it to see that he did not knock it about. On the lower part of the mountain where the ascent was not very rapid, and the snow not above our knees, we generally went about sixty paces at a time, and then stopped to rest. I almost from the beginning had followed the example set me by the guide, who, every time we stopped, threw himself down upon the snow, which I found relieved me exceedingly; and as I wore a flannel jacket and trowsers,

such as are used for playing cricket, they had not time at each stoppage to get wet with the melting of the snow. But now, as we approached the summit, the inclination being about 75 degrees, and the snow above our thighs, it was with the greatest difficulty we could do more than fifteen paces at a time. Not a hundred yards from the little house which has been built by the company engaged in extracting sulphur from the crater, and to reach which was our present aim, our guide declared he was too tired any longer to take the lead, and that one of us two Englishmen, who were close to him, must do so. I volunteered, but after about forty yards, found it was beyond my strength, whereupon my companion, who was the strongest of us, went first and took us up to the little house, where the three Englishmen arrived within a few minutes of each other, at half-past twelve, having been five hours and three-quarters from the time we started; I came in second, in which I thought myself very fortunate, considering the extra weight I carried. We found the door locked, but as a great part of the shingle-roof had been carried away by the storm which did so much mischief in Mexico last Good Friday, the first man scrambled through the aperture and broke open the door from the inside. This little house, or room, which was now half full of snow, and was built by the director of the sulphur-works for himself, is about 100 feet below the lower lip of the crater, and looks due east over the valley of Puebla. It is built of timber which was brought upon the backs of Indians, and I am assured that a beam weighing two hundred pounds, was brought up by an Indian in two days, from the limits of vegetation. The same man afterwards slipped in going down the crater, and died of the bruises he received in the fall.

After resting a minute we sang God save the Queen, with lively voices, by way of proving to each other that our lungs had not been damaged by the ascent; and though, if I had any fears about my powers of endurance, it was on this particular point, I was gratified to find that I did not suffer in the least. Then burst forth one unanimous exclamation of admiration at the magnificence and extent of the view which now lay before us, particularly of the valley of Puebla, from which the clouds had now all disappeared, with the exception of a lingerer which still covered the town of Puebla itself. From our feet straight down to the limits of vegetation was one sheet of snow, without a rock or a stone to break its unity; then vast woods, then towns and villages dotted over the cultivated lands, but all seen exceedingly clear, even with the naked eye—a peculiarity which I have never observed in any country so much as in the high table land of Mexico; the eye could even distinguish the different green of the sugar plantations in the "Tierra Caliente," far away. Nature, however, likewise reminded us that our appetites were in pretty good order, and we fell upon the little we had brought with us, drank some brandy and water, and those who smoked enjoyed their segars—these latter incidents, to prove the possibility of things which our friends in the lower regions assured us were impossible at such an elevation; neither could we boast of having suffered any severe pain in our ears, or any swelling of the veins, as I was assured would be the case, before we began the ascent. That our guide was very much fatigued, and that after coming down in the evening he was attacked with a most severe inflammation of the eyes, which rendered him for the time entirely blind, was, I believe, owing entirely to his own imprudence; for he took up with him a bottle of very strong Catalan, to which he applied himself constantly and vigorously. We were not a little surprised, while we were eating our ration of bread and meat, at the appearance of a mouse, who was exceedingly tame, and eat with avidity the crumbs we threw him; the director of the Sulphur works assured us that he was indigenous, though even he could not explain to himself what he generally lived upon; and further, that there were two other species of mice he was in the habit of seeing there constantly.

My next care was to set up my barometer. One of the thermometers I found broken, how I cannot imagine, for I had packed them very carefully, and had never let them out of my own hands; however, I considered myself very fortunate that I had brought up two of them. The height of the little house I have mentioned above, and which the Director entitled the "Rancho del Espejo," is,

according to my barometer, 17,277.6 English feet, or 5,231.2 metres. In the year 1826 the mountain was ascended by Mr. William Glennie and his brother, on the north-west side, and a barometrical observation was taken by the former on the highest peak, which is on the west side of the crater. The height calculated by him was 17,898 English feet, and we conjectured that that peak was about 500 feet higher than the lower lip of the crater, and the Rancho del Espejo about one hundred feet below the latter; so that in fact my observation is a confirmation of that taken by Mr. W. Glennie. We did not go to this point, because, on account of the broken nature of the mountain, it would have cost about four hours' more hard labor to have got to it, which we did not think worth while for so small an elevation. The thermometer, in the shade, was at 3° centigrade, the snow was melting in the sun, but froze immediately as it fell from the roof on the shady side; for at this elevation, as even at Mexico, water freezes much above the freezing point marked on the thermometer. In endeavoring to melt some snow in one of my glass tubes, in which to boil the thermometer, the tube burst; I however succeeded in melting some more sufficiently to boil in the other tube, and found the boiling point to be 184° Fahrenheit; at the Rancho de Tlamacas it was 192°, and at Mexico 200°. But as the thermometers were not on a very large scale, it was extremely difficult to mark the number of degrees in the boiling water with any great exactness.

Great as was the impression which the first view of the crater made upon me, it is impossible for me to give any adequate description of it. The ascent to it from the Rancho del Espejo was so rapid that we came upon it of a sudden, the snow reaching to the very brink. It required a tolerably good head not to be a little bewildered at so suddenly coming upon the edge of a perpendicular depth of 1,000 feet, which is certainly no exaggeration of that of the crater, even from the lower lip; from the highest peak it must be 1,500 feet. The form is rather more oval than circular, and the distance across, from east to west, about 3,000 feet; the sides are nearly perpendicular all round; on the north-east side, however, there is a steep descent to a small terrace, upon which a whinney has been fixed, on the very edge of the crater, for the purpose of letting down and drawing up the man employed in getting sulphur from below, and of raising the sulphur; the rope of this whinney is 250 measured varas, perpendicular depth, or 687 feet. The surface of the bottom of the crater is sprinkled with from forty to fifty jets, from which smoke is constantly issuing, some more, some less; in some of them large stones are boiling one over another, like the bubbles of boiling water, being sometimes of a bright yellow color, which remains for a moment and disappears; the smoke emitted has a most nauseous smell of sulphur. All this is accompanied with a constant rumbling noise, like a heavy surf breaking over a rocky shore. The director assured us there was a stream in the bottom so strong that it burnt holes in the clothes of the workmen; he said it lost itself in the bosom of the mountain. Large masses of stone are being constantly detached from the sides of the crater, which go thundering down to the bottom, to the great risk of the workmen, one of whom had been killed some days before by a stone falling upon his head. This was the danger which principally deterred us from descending into the crater, which we could see very well from above. From conversations I have had with Mr. Frederick Glennie, who went up in 1826, I should say the volcano has become much less active; for he tells me that besides the constant rumbling noise which I have described, there was occasionally a loud explosion, and that stones were thrown up above the crater, falling on the sides of the mountain. We saw nothing of this sort.

A vast quantity of very pure sulphur is found in the crater, principally in the crevices of the sides, where it crystallizes; as much as 100 arrobas (2,500 lbs.) has been taken out in a day by the six Indians now employed there, who generally remain in the crater for five days at a time, sleeping under a rock, so as not to be touched by the falling stones. They are paid a rial for every arroba they produce, but lately it has been found difficult to procure sufficient workmen, from the well founded dread they have of the falling stones. One of my English companions begged the director to let him take a few specimens of sulphur for his friends

in Mexico. "Como!" exclaimed he. "No este Ingles?" "Si, Senor." "Pues siempre medicen que los Ingleses no tienen amigos." The expression of such a sentiment on the top of Popocatepetl produced a hearty laugh from all three of us.

On our return to the Rancho del Espejo, we found our Russian friend had arrived about an hour after us, and an hour and a half later the remaining Mexican and the two Spaniards made their appearance. The Mexican had almost fainted on the way, from fatigue and cold, and had been obliged to warm himself by sitting close to a crack in the rock on the side of the mountain, from which a sulphurous smoke was constantly issuing; however, though weaker than any of us in physical force, he possessed great moral energy and perseverance, and we complimented him highly on his reaching the top.

We had intended to pass the night at the little house, in order to see the sun rise the next morning, and had therefore dispatched some Indians, before starting, with some blankets; but as now we began to feel the cold bitterly, and as the Indians did not appear, the three Englishmen and the Russian determined to go down again to the Rancho de Tlamacas; the two Spaniards and the Mexican were too much fatigued to descend, and as they had "Zerapes," they passed the night on the top with two guides. One of the Spaniards, and another of the guides, were attacked with so severe an inflammation of the eyes, that they were obliged to be led down the next morning, without even having had the satisfaction of seeing the crater. In my opinion this was principally owing to their own imprudence. Neither did any of them see the sun rise the next morning, for it was cloudy. What had cost us 5¾ hours of hard labor in ascending, we went down in an hour and ten minutes; for it was very easy work running down in the snow, compared to what we had gone through in the morning; from the pace we went, I should say the distance between the Rancho del Espejo and the Rancho de Tlamacas was at least six English miles.

There is nothing dangerous in the ascent of the mountain, though it is extremely fatiguing, and I fully appreciate the energy of the Englishmen who made the first ascent in 1826, who were unable to persuade any guides or Indians to go up with them; who, in perfect ignorance, took the most difficult side, and who were fifteen hours getting to the top. We returned to Mexico on the 22d of May, and received many congratulations from our friends, who did not imagine we should be able to get to the top, as they had had constant rain since our departure. Two days after my return, the whole of the skin of my face, ears and neck, had peeled off, and even the under skin is so browned that it will probably not recover its natural color for a month or two. This I attribute to my not having covered my face like the rest, and to the cold air, quite as much as the hot sun.

2.—STANZAS.

THE struggle is over, the parting is past—
Thou art gone from thine own sunny country and thy sight
at last—
With a shade on thy brow, and a mist on
Thou hast breathed to thy home—a last, mournful "good night."

Thou art gone, and I stand with a desolate heart,
On the spot where I saw thee, in sadness, and fair—
depart; [ous
Thou art gone, and the world looks less glori-
Than when thy bright beauty, oh! loved-one, was here.

Yes! loved! let me speak the deep-passionate word,
Tho' hereafter its tones be forever unheard—
At least till I pour out my full heart to thee,
And learn what its hopes and its future may be.

I have worshipped before, at full many a shrine—
have bowed to a grace far less winning than thine—

But never! ah! never, hath *real* love stole,
As now it hath done to the depths of my soul.

I knew not, I dreamed not, how mighty the spell
That my spirit had owned, till I bade thee farewell—
I knew not, I dreamed not love's fetters could bind
With a grasp so relentless—heart, feeling and mind.

Did my voice at our parting seem careless and free,
As I stood by thy side, and looked out on the sea?
The sea—for whose breezes the white sails unfurled
Were departing with one I loved best in the world.

Ah! the gladness was feigned, and the lightness a lie—
There *were tears in my soul*—tho' they filled not the eye;
'Twas a time, when e'en hope for the moment had flown,
And my spirit seemed utterly, bitterly lone.

P. H. H.

3.—RED RIVER RAFT AND REGION.

The following letter from Capt. Bayley, of the State Engineer Corps, is so full of interesting material in regard to a portion of western Louisiana, Texas, &c., that we give it publication with great pleasure. The importance of this vast country is not, we believe, sufficiently realized now. It must become the seat of population, wealth and power, and occupy a controlling position in the South. Capt. Bayley gives us the gratifying intelligence that the planters of Red River have been abundantly favored the present season, and are fast forgetting the reverses of the past one. [Ed.]

State Engineer's Office,
Baton Rouge, Dec. 1, 1850.

To J. D. B. DeBow, Esq.

This river, navigable or susceptible of being made so, for a distance of 1500 miles from the Mississippi, through a country unequalled in fertility and richness of soil, is destined one day to be the garden spot of the South. Peculiar in its character, unrivalled in its resources, it presents a field for observation and study differing in many respects from the other tributaries of the Mississippi. The changes which have been effected by former rafts, and those now in progress, in consequence of the present one, are peculiar features in the history of Red River. These must be examined attentively—causes and effects thoroughly understood, before a correct opinion can be formed as to the best plan for the permanent improvement of this river.

The valley of Red River is very similar to that of the Mississippi, being entirely alluvial and covered with a dense growth of heavy timber. The immediate banks of the river are considerably elevated above the adjacent lands, and are easily acted upon by the force of the current; in consequence a large amount of sedimentary matter is held in suspension by the water. The declination of the river is very irregular, but is said to average eight inches per mile. My own opinion is, that it will not exceed six.

At a low stage, the water on the shoals is from three to five feet deep.

The old raft of Red River at one time commenced near Natchitoches. Above this lower section, I conceive, the river must have been comparatively clear and open as high as the Cashatta Chute.

At the time the removal of the raft was commenced by the United States, the lower end was at Loggy Bayou, some forty miles above Cashatta. We are informed that the Governor of Louisiana ordered the troops stationed at Natchitoches to break up and cause to float off all the lower part of the raft. This, and the natural decay of the timber, will account for the disappearance of the raft below Loggy Bayou, when we consider likewise the force of the currents and amount of water passing out of the mouths of Bayou Pierre, Cashatta Chute and Loggy Bayou. All the water passing out of Red River above, on the East and West, had of necessity to return to the main stream through the bayous above named, on account of the proximity of the highlands to the river, at their several mouths. It is evident that the lower part of the raft, already weakened by decay, would finally yield to the force of the current from these bayous and pass off.

Before the commencement of the formation of raft, the river between Shreveport and Grand Ecore must have been wide, with high banks, and of sufficient capacity to discharge all the water coming from above, as is the case now below Grand Ecore, and above the raft and its influence. It is very possible that the raft may at one time have extended below Alexandria, and have been occasioned by the back water from the Mississippi soon after Red River forsook its legitimate channel to the Gulf (the Atchafalaya); or it may have originated from the accidental collection of a family of snags which arrested the drift. Whether the one or the other was the original cause or not, is comparatively unimportant. The effects and their removal are the subjects requiring most attention.

As before stated, the banks of Red River cave easily and rapidly; it follows that an immense number of trees fall into the river annually. These trees are carried along by the force of the current at high water, and are firmly wedged into the raft. From one to two miles is added to the raft in this manner every year.

The raft acts as a dam, the water is raised many feet above its natural level, and makes its escape laterally over its banks.

The back water extends many miles, and

all the valley on each side, and for a long distance above, is inundated—submerged.

The earthy matter held in suspension by the water being deposited in the raft, soon fills up the channel and makes the dam almost a perfect one. The loss of current above causes a deposit to be made in the bed of the river, and in consequence the lateral overflow is increased. From one to two miles of the whole valley of Red River is thus ruined every year.

Bodeau Lake was once a prairie; Soda and Clear Lakes were dry land; and Caddo Prairie, which five years ago was above the reach of overflow and one of the most fertile bodies of land in Louisiana, is now, at high water, overflowed from five to ten feet. Long Prairie, in Arkansas, as well as the whole valley, will soon share its fate.

Let us consider in what manner we must apply our remedy. Simply removing the raft will not answer;—the river below has become too contracted, and is too much obstructed by snags and by willows, &c. growing beneath its banks, to carry off the drift; the raft would form again immediately, and all we should accomplish by the simple removal of the raft, would be the ruin of the plantations for thirty or forty miles below by overflow, and the ruin of the river for navigation by filling it with snags.

On account of the river running along the base of the highlands, to the east of the valley, at the site of the present rafts, the water escaping from Red River passes out to the west through Lake Soda, Cross Lake and Cross Bayou, or through Lake Soda and Twelve Mile Bayou, into the river again just above Shreveport. Fully two thirds of the water takes the route through Cross Lake and bayou. A large proportion of the water which finds its way through the raft, determined by the back water from below at a high stage, passes off to the east, through Willow Chute, Benoit's Bayou, &c., and contributes to overflow the lower part of Bossier Parish. In consequence of the water leaving the river above only on the west, it is in a manner concentrated. It has accordingly cut out for itself several channels. The principal one of these is through what is called Dooly's Bayou, connecting with the Pass between Clear and Soda Lakes, above Ferry Lake. It is very direct, is enlarging very rapidly, and will, if properly assisted, soon supersede all the others. It is already of sufficient capacity to admit the passage of the largest size boats running to Shreveport, at a high or medium stage of water. Extensive bars, covered with willows, are encroaching upon Lake Soda on the east and north. The water, being confined to a narrower space by each year's formation, is deepening. The same is the case with Cross Lake. Cross Bayou, (already larger and deeper than Red River itself,) at a low stage of the water, is twelve feet lower than the level of Cross Lake, and divided from it by a ridge only twenty-five hundred feet wide.

The current has already made considerable progress in cutting through this ridge, and with the assistance that is now being given to it, in the shape of a ditch, will probably complete the same during the next period of high water.

The area of Cross Lake being from twenty-five to thirty square miles, it will readily be perceived that should it be drained ten or twelve feet below the usual low water mark, the period of *good* low water navigation in Red River will be much extended. Cross Lake will act as a reservoir, and supply water to Red River every year at the time it is most needed.

The distance by way of Dooly's Bayou, from Red River at Cashatta Bluffs to Shreveport, is about forty miles. By the river, between the same points, it is seventy. I am convinced that the whole river can be made to adopt this route through Dooly's Bayou, and abandon entirely the old channel. The work required to open and improve it would be heavy; but we should have the assistance of a powerful current, caused by a fall of nearly a foot per mile. The *cut-off* (as I will term this route) completed, we should have reclaimed the whole valley to the east, and contributed much towards the reclamation of the lower part of Bossier Parish. By leaving the raft where it is, we preserve the river below in a good condition, and are enabled to free it entirely from snags.

The head of the raft is at present about four miles below Dooly's Bayou—this four miles would accommodate from two to three years' raft. In the bend opposite and below

Dooly's Bayou, there is a large lake, divided from the river by a strip of low land about one hundred yards wide. By cleaving the banks we can throw the drift into this lake, and it is of sufficient size to accommodate ten years of raft. Above we have many lakes, some very large, capable of being made reservoirs for drift. Several lakes adjoining Dooly's Bayou, as well as Shiftail and Soda Lakes, can be made to receive raft. It is sufficient to say, that all the raft that ever will come down can be disposed of so as to prevent injury to the route recommended. Our next step would be to lessen the quantity of drift from above. This could be accomplished by cleaving the banks above for a distance of four or five hundred miles, and deadening the timber still further back for the same distance. By the time the river would cave its banks through the cleared land to the deadened timber, said timber would be so much decayed as to be harmless. The lands on upper Red River, for hundreds of miles, are equal to any in the world; a navigation which can be relied upon, is all that is required to induce settlement. The whole valley is peculiarly adapted to the cultivation of cotton, more so, perhaps, than lower Red River. Every plantation cleared lessens the quantity of falling timber, and confidence once established, that navigation will be maintained, ten or fifteen years will place the river beyond the reach of danger from raft.

Provided the raft is removed, in preference to opening the route to the west, it would be indispensably necessary to clear the river above and below perfectly. Below, that it might be enabled to pass off the drift, and above, to lessen the quantity. It is susceptible of proof, from the experience gained by the removal of the old raft, that the removal of the present one would not materially improve the old channel; and further, that it would not prevent the largest portion of the water from taking the route through Dooly's Bayou and the lakes. I will premise, however, that in consequence of the water leaving Red River only on the west, Dooly's Bayou is much farther advanced as a channel than Bayou Pierre was at the time the original raft was removed.

Mr. Shreve, when he removed the old raft, followed all the old bends, (with two exceptions,) and closed all the outlets, with the expectation that the river would enlarge itself sufficiently to carry off all the water. From ten to fifteen years have failed to accomplish this: it is true, the river is much larger than it was, but it is not half large enough yet. Bayou Pierre is about one hundred miles shorter than by Red River, between same points, and, as is the case with both *sides* of the valley, is much lower than the river.

Had the raft not been touched, one half the amount expended upon it would have opened Bayou Pierre, and made it Red River. Had this been done, all the lands to the east, comprising the whole valley, would have been reclaimed. Had all the large bends been cut off, instead of going round them, perhaps there might have been sufficient current to cut out Red River and make it large enough to accommodate all the water. As it is, the water naturally takes the nearest route through the lowlands on the east and west—on the east, through Willow Chute, Williams' Bayou, Benoit's Bayou, and a multitude of others, into Bodeau, Red Chute, Flatte River, &c., and through Loggy and Cashatta back into Red River; on the west, through the head of Bayou Pierre, Anderson's Bayou, Sand Beach River, Tones' Bayou, Pascagoula, Prairie River, Grand Bayou, &c., into Bayou Pierre, and through Bayou Winsey and the different mouths of Bayou Pierre, back into Red River. The water is so divided that it fails to make either route large enough, and in consequence but a narrow strip of land on the immediate banks of Red River is susceptible of cultivation.

As it *would be* at the present raft, so *is it now*, below Shreveport. Within fifty miles of Shreveport the water is abandoning Red River, notwithstanding that the raft was removed and the lateral outlets closed. I go much farther, and assert (what will appear strange to many, and unworthy of belief, but it is nevertheless the result of actual observation that nothing but extensive cuts-off will prevent nine tenths of the water in Red River from passing into Bayou Pierre, and ruining low water navigation within a few years.

Red River should be thoroughly cleared from snags, and all timber growing beneath

its banks cut close to the ground and into short pieces, from the foot of the raft to the Mississippi. A canal or channel should be cut fifty feet wide through the falls at Alexandria, and all the waters thrown into said channel by walls laid in cement, upon the rocks across the balance of the river.

Two hundred thousand dollars would be necessary for the completion of all the works recommended; but still, should the contemplated appropriation of eighty thousand by the United States be made, and *judiciously* expended in the vicinity of the raft and above, a good navigation can be given to upper Red River.

The last appropriation was utterly thrown away. The raft was re-formed in three weeks after its removal, and the river below nearly ruined by snags from the said raft.

G. W. R. Bayley,
Assistant State Engineer.

4—THE CAUSE OF THE SOUTH.

When we warned the South in our July number, last year, that the time had come to light up the torches of industry throughout her limits, we were denounced by many leading Southern presses as recreant to the duties of our post, and told in emphatic terms that the torches that would be lit up would very likely be of an altogether different character.

For many years—it pains us to say it—we have been unable to contemplate, without a feeling of gloom and despondency, the future of a confederacy, which, springing from the throes of a revolution, grew up to wealth, and power, and opulence, in the memory of living men, without a precedent in the history of mankind. The concealed and creeping worm insidiously working its way into the core of the towering and gigantic oak; the hectic flush deepening and fading upon the cheek of beauty, and manhood, and strength, furnished but inapt parallels of the "threatening death" that lurked hideously at the heart of all this prosperity and power—

"Voluminous and vast, a serpent armed
With mortal sting."

It matters not how this fell hydra has been engendered, who first nursed its being, or whether, as is asserted, the South has had some responsibility in it;—the naked fact stands out, that it has crept up from slime and filth to the topmost column of the national temple, and sits chuckingly there, with its dire fangs fixed in the very vitals of the republic.

There are two things upon which the whole South seems now agreed, *as one man*, whatever minor points may separate us;—and these are, *that grievous wrongs have been done, as well as gratuitous insults offered us, by the free States of the North, and the Congress of the Union, and that the cup of forbearance or endurance is so full that a single drop shall make it overflow.* This is substantially the position, though weakened by other declarations, taken even at the "Great Union Meeting" held in December in New-Orleans, a city which has hitherto been considered throughout the South lukewarm in the cause which has united her people together.

The cup of endurance is full! Are we in earnest, men of the South, in this declaration, and do we realize in all its force how much is involved in it? *Is this the Southern platform?* Thank God if we had such a platform to stand upon and unite together upon, we could then be respectable, could be feared, could present an unbroken phalanx to the invader, and bid him move, and die.

A SINGLE DROP MORE!

Are we satisfied by the past, fellow citizens—by the resolves of public meetings and of State Legislatures of the North; by the tone of sentiment which is marked in its press, and is heard everywhere, even in the highest circles, among its people; by its growing majorities, flushed with success and victory? Are we justified in believing, or even in hoping, that the remaining *drop* will not be poured out to swell over the already brimming cup?

We would not be alarmists, nor so passionate as to refuse an ear to reason, when it is offered; but in God's name, let us not be lulled too easily into security, where so much of honor, and liberty, and existence, are at stake.

If we could see it written upon the vault of heaven, by the hand of an archangel, or if a revelation were made to us as indisputable as the Holy Scriptures, that, sated

with past victories, the free States of the North were now disposed to pause, and forever arrest the hand of aggression, we should hail the Union again with exultation, as our fathers hailed it, and, burying the remembrance of all our grievances, dire as they have been, shake hands in fellowship, and shout heartfelt hosannas to its *perpetuity*.

But alas for us, we are so constituted as not to be satisfied with the evidences many of our best friends are relying upon, that the danger is over, that the hatchet is buried, peace proclaimed, and the South called upon only to rejoice and be exceeding glad at her great salvation.

At least, it would seem the part of wisdom and discretion to guard against the *possibility* of future dangers, or to prepare to meet them, should they be precipitated upon us in spite of all our efforts and our hopes. It is in the power of the South to save the Union, but it will require her *united* and *concerted* action to do it. We therefore favor,—

1. *A Southern Convention*—a Convention of the whole of the slave States, in which, disregarding all points of difference, it shall be laid down in distinct and unmistakeable terms, what will constitute, in the judgment of *all* of them, a ground for *resistance*, or for the establishment, should necessity demand even that extreme, of a separate Confederation. This fixed—and there would assuredly be little difficulty in doing it—it would be the duty, perhaps, of those States who are already insisting upon action, to yield their own preferences, for the general good of the South. Common interests and common dangers should unite us, and upon this platform we would be irresistible. We believe that the South can be united now, and that a Convention of our States will resolve unanimously, and with enthusiasm, that with a single move more upon the part of the North, the "Rubicon" will be passed forever. This combined action seems to us the only one likely to be effective, however high our admiration and regard for those gallant States who are now disposed, solitary and alone, to strike for their rights, and leap, Curtius-like, into the yawning chasm.

We are in favor of a Convention, not exactly like that of Nashville, which represented but a few States, but one of *all the South*, elected by the people, and charged to demand, like the Barons of Runningmead, the *great charter* of their liberties, or, like the Parliament of England, their *bill of inalienable rights*.

Perhaps this Convention may save the Union, and *perpetuate* it. We think it will. At all events, such a Convention could not endanger the Union, unless its further preservation would be a crime.

2. We are in favor of a *Southern Mercantile Convention*, as a present proper means of strengthening the South and enabling her to retain at home the millions of wealth now contributed to the North, by building our own ships and conducting our own trade with foreign powers, and realizing all of the immense benefits to be derived therefrom. There has never been any good reason for our subserviency in this particular, and there cannot be now, when our favors are received with systematic abuse. We are glad to hail already a movement in this behalf in some of the Southern States.

3. We propose, too, a *Southern Manufacturing Convention*, and that we agree to manufacture at home every bale of cotton that we eventually consume, and pay no more tribute to Northern looms. It is in the power of the South, if she pleases, to hush the sound of every spindle in New-England; and if she has the power, should she be so merciful as not to use it? Much cause has she, indeed, for forbearance!

4. We are for diversifying in every way our industry, and sending out of our limits for nothing that we can make within them. Has the North iron, and coal, and granite, marble and other minerals? So have we, in bountiful profusion, needing but the willing hand to develope them. Let us build railroads and plank roads, and invest in them our surplus capital, and foster such improvements in spite of every discouragement.

5. Let our people cease their annual migrations to the North, in which they squander millions, which, if retained at home, would give new life to every branch of domestic employment with us. We have watering places that need but *fashion* to make them equal, if not superior, to Saratoga or Cape May, with none of their disadvantages. Our

children should be educated at home; yet at this moment there are thousands of Southern youth rejoicing at Cambridge, or Yale, or Amherst, and similar institutions, whilst our own Colleges and Universities have but a stagnant life. We should encourage our own literature, as well as educate our children. A Southern periodical or a Southern book is a *rara avis*, whilst every shelf or table at the South groans under the product of Northern brains. Good this product *may be*—but is there nothing good, fellow citizens, except beyond the limits of Nazareth?

Thus much we have written, though hastily and disjointedly, without, as we think, going a step beyond what every true friend of the South, whatever his other views, will regard as orthodox, and as demanded by a proper regard for the future welfare and safety of our people. We have spoken sober truths, without prejudice or passion, and intreat for them a patient hearing.

Individually we might have gone much farther in counselling *action*, had our sense of past wrongs and hopelessness of future rights been allowed to influence us entirely. We honestly differ in regard to these matters from our friends, who appear to be in an immense majority throughout the South, and the heart of true patriotism will make many concessions.

With these remarks we conclude our present paper, after making several extracts from pamphlets on the table before us which have sprung out of the present troubled state of things at the South. Though we may not agree always with the authors in opinion, there are many sound truths expressed by them, which should be proclaimed throughout all our limits.

POWER AND RESOURCES OF THE SOUTH.

We abstract the following from the very able address of John Townsend, Esq., in which he exhausts the subjects of Northern aggression and Southern power of resistance, should that evil day, which God forbid, ever be forced upon us:—

In order to understand the abundant resources of the Southern States, towards becoming a great, powerful, and independent nation, capable of protecting herself from all aggression from abroad, or at home; and of becoming wealthy and prosperous to a degree heretofore seldom enjoyed by any people; examine first, the map of the United States, and then indulge in certain considerations, which obviously present themselves, but which the occasion will allow us, only very briefly to glance at.

Beginning at the Capes of the Delaware, go up that bay until we reach the Southern boundary of Pennsylvania. Pursue that boundary west, to the Ohio river; then down that river to its junction with the Mississippi; then up that river to the northern boundary of the State of Missouri; then around the northern and the western boundary of that State, to the line of 36° 30′; thence west on that line to the Pacific Ocean. Or, if it be preferred, until it strikes the upper waters of the Rio Grande; then down that river to the Gulf of Mexico; and thence, around to the Atlantic. Within these boundaries we have "The Southern United States of North America,"—as magnificent a country as ever the sun shone upon; solid, compact, and self-supporting for all purposes of defence,—with noble rivers, a fertile soil, great mineral resources, a genial climate, for all purposes of agriculture, manufactures, and commerce; and with a population at this time, of about 6,000,000 whites,—a hardy race, enterprising, courageous, intelligent, and generous; but unhappily for themselves, too confiding in those who are lulling them into security, to betray and then ruin them. These States also possess a black population of about 3,000,000,—a docile, obedient, orderly, and athletic people;—when let alone, happy, contented, and attached to their owners; and with their labor directed by the superior intelligence of the white race, and aided by their capital, constituting one of the most efficient and profitable classes of laborers in the world.

Examining these States next, in their capabilities to afford sustenance and wealth to man; we find them producing a superabundance of meats, and fruits, and grains and roots; and yielding for a large export, the most valuable agricultural staples that the world knows:—staples which bring millions of people, in other nations, dependent upon them for the raw material; upon which again depend the manufactures and the commerce of those nations. The cotton, rice, tobacco, sugar, and other articles exported from those States, amount to over $95,000,000, annually, besides what are kept back, and used freely for their own comforts, or manufactures at home. This affords, not only a very large income to the inhabitants, but as imports are in proportion to exports, and the revenue of a nation in proportion to its imports, it will afford, at a moderate tariff of duties, an overflowing treasury, which will enable the Southern United States to do, (what has heretofore been denied them,) and that is, by expending within themselves, and for their own benefit, those immense sums which have been hitherto extorted from them, and squandered elsewhere, amply to fortify themselves, and develope their own mighty, but dormant resources. How different will be

the aspect of things in the whole South, when this tide of wealth is dammed up within our own borders, and made to roll back among our own people; and when our immense capital is employed by our own merchants in establishing a direct trade, between our own Southern ports, and our customers all over the world. Then every vulnerable point will be protected by an ample fortification; then every suitable harbor will have its well appointed dock-yard, and our navy will soon rank with the proudest. Then every river, harbor, channel, or bank, will be surveyed and mapped out for the security of our commerce. Then, *when we have our own* and it is *spent among ourselves*, will the unaccustomed nourishment be diffused through the whole system, and its vivifying influence be felt in every pore. The arts will revive, manufactures will spring up around us; our agriculture will rear its drooping head, our commerce will expand; mechanic labor, meeting with ample rewards, will pour in upon us, and emigration, no longer discouraged by the uninviting aspect of our country, will flock to our shores. And then, as the consequence of all these things, will we exhibit to mankind, a refutation of the calumny of our enemies, which attributes the impoverished condition of things at the South to the institution of slavery among us, and not rather to the systematic robbery of our National Legislature, (where we are in hopeless minority,) by which the immense revenues drawn annually from Southern labor, is disbursed almost entirely at the North, for the encouragement of the labor of that section.

WEALTH OF THE SOUTH.

We take this from an admirable address delivered by Wm. E. Martin, on the celebration of the anniversary of Fort Moultrie. This address is so interesting in many particulars, that we shall hereafter have occasion to extract more largely from it:

The crop of the whole world cannot be accurately estimated, for want of correct accounts of the quantity consumed in India, and exported thence to China. We may, by approximation, however, arrive at a conclusion sufficient to illustrate our views. The quantity imported into the whole of Europe, from all parts of the world, during the years 1846, 1847, 1848,* and 1849, reached 11,502,000 bags of 300 lbs., which, at the average of prices for these years, 8¼ cents,† was worth $293,301,000. The production of cotton in the United States commenced in 1790, and in the next year only 81 bales were exported, and yet of 11,502,000 above stated, 8,922,000 went from the Southern States of America, which at the same price, (8¼ cts.,) is worth $227,511,000. So that in quantity the production of the South is as 8,922,000 to 11,502,000 and the value is as $227,511,000 to $293,301,000, and thus we see that we produce more than three-fourths in quantity and value of this great staple. If the unascertained quantity consumed in India and exported thence to China, which is inferior in staple to ours, is set off against the quantity of our cotton consumed in the United States, (which I have not added to the computation,) the result, it is believed, will not be varied.

Let us look at this question in another point of view. The crop of the United States in 1823, was only 509,158, and yet the crop of the year 1848–9 had reached, 2,728,596, more than five times as great in 1848 as it was in 1823, twenty-six years before. This was worth, at last year's price, (10 cents,) 81,871,000. Deducting 518,039 as the quantity consumed in the United States,

We have for exportation, 2,227,844 bales, which at 10 cents, (a low estimate,) is worth	$66,825,320
If to this be added the other domestic productions of the South	32,674,176
The whole value for southern exports for 1849, will be	$99,500,000
More than two-thirds of the whole domestic exports from the United States for that year, which was	$131,710,081
And more than three times as much as the whole domestic export from the North, for the same year, which was‡	$32,210,081

The remarkable fact is also shown that the domestic exports of the South, *exclusive of cotton, her great staple*, is $32,674,176, while all the exports from the North are $32,210,081, leaving the value of her cotton over and above. The fact that the North consumes less than one-fifth of our cotton, while four-fifths find so ready a market on our wharves, is significant of the *independence of the South*; and the North might well be reminded by her receiving *all her supply of raw material from us*, and sending it again to us in her manufactured goods, (even if less keen-sighted than our Northerners are reputed to be,) how dangerous is the policy of converting an ally into an enemy, and a *customer* into a *rival*.

THE BLESSINGS OF THE UNION.

We give this extract from the letter of the Hon. Wm. Grayson, Collector of Charleston, to Governor Seabrook, as showing the other side of the question; but we are bound to say, that Mr. Grayson, in many parts of his letter, surrenders every thing which has ever been considered worthy of contending

*Compiled from tables of Collman and Stolterfoht.

† The average is made from reports to the Prussian government by the Consul at Charleston.

‡ Reports of Secretary of Treasury.

for the South. It is ever thus that one extreme will engender the other:

"They ask us with astonishment, what is it you propose to destroy? Is it the confederacy which for sixty years has secured undisturbed internal peace to a continent—which has conferred unexampled prosperity on the people of North America—which has enlarged their limits from the Mississippi to the Pacific Ocean, and increased the number of their states from thirteen to thirty-one—which establishes in this immense region the same laws, gives it the same language and literature, imparts to it the blessings of unlimited free-trade, and unrestricted social intercourse, and enables it to carry on, in unbroken links, from state to state, every kind of internal improvement, by which that trade and intercourse may be made more profitable and easy? It is Union, which has imparted to the American people the strength and influence of a great nation. It is Union, which has made their voice potential among the strongest of the earth. It is by the Union only, that we are enabled to bid defiance to all foreign aggression from whatever quarter. Who are indifferent to the advantages of the commerce, or would lightly challenge the hostile fleets and armies of the United States? Shall we from this condition, reduce ourselves to that of separate and feeble communities? The fables of our childhood would rebuke our rashness, and teach us the strength of Union, and the weakness of dissension and separation.

"Let us reflect on these effects of the confederacy more minutely. To the Southern man—the advocate of free-trade—what can be more imposing than the condition of a great continent more than equal in extent to all Europe, enjoying within itself the most perfect freedom of trade and intercourse; no duties, no passports, no hindrance of any kind? Every man goes where he pleases; sells and buys what he pleases; establishes his household in any state of the thirty-one, with all the rights and privileges of the native citizen of each state, without any of the smallest interference of police, spy or custom-house regulations. Nothing like it exists, or ever has existed on earth. In Europe, you are stopped on the frontiers of every state. Your baggage must be rummaged, your passports *vised*. In every petty principality, you are exposed to the insolence and ignorance of the government officials. New duties on goods, new examinations of persons, new difficulties of every sort await you at every step. What a contrast this to the unrestrained liberty of intercourse? to the unlimited freedom of trade, which the confederacy, and the confederacy alone, secures to the American citizen throughout his immense country? And if these effects of the confederacy be admirable now, what will they be when the population and wealth of the country are increased a thousand-fold?"

In our next we shall furnish more quotations from the pamphlet of Mr. Grayson, and also from the very able answer to it which has been published, as well as from the oration by our friend William H. Trescot, entitled the "Position and Course of the South;" the pamphlet of Mr. Garnet, of Virginia; the comprehensive treatise "On Slavery, and Southern Rights and Remedies," by Edward B. Bryan, &c. We shall be impartial in presenting both sides, reserving our own opinion, and leaving the reader to form his. We take the following summary from the Essay of Thornton Stringfellow, entitled, "A Brief Examination of Scripture Testimony on the Institution of Slavery:"

THE BIBLE ARGUMENT FOR SLAVERY.

My reader will remember that the subject in dispute is, whether involuntary and hereditary slavery was ever lawful in the sight of God, the Bible being judge?

1. I have shown by the Bible that God decreed this relation between the posterity of Canaan and the posterity of Shem and Japheth.

2. I have shown that God executed this decree by aiding the posterity of Shem (at a time when "they were holiness to the Lord,") to enslave the posterity of Canaan in the days of Joshua.

3. I have shown that when God ratified the covenant of promise with Abraham, he recognized Abraham as the owner of slaves he had bought with his money of the stranger, and recorded his approbation of the relation, by commanding Abraham to circumcise them.

4. I have shown that when he took Abraham's posterity by the hand in Egypt, five hundred years afterwards, he publicly approbated the same relation, by permitting every slave they had bought with their money to eat the passover, while he refused the same privilege to their *hired servants*.

5. I have shown that God, as their national law-giver, ordained by express statute, that they should buy slaves of the nations around them, (the seven devoted nations excepted,) and that these slaves and their increase should be a perpetual inheritance to their children.

6. I have shown that God ordained slavery by law for their captives taken in war, while he guarantied a successful issue to their wars, so long as they obeyed him.

7. I have shown that when Jesus ordered his Gospel to be published through the world, the relation of master and slave existed by law in every province and family of the Roman Empire, as it had done in the Jewish commonwealth for fifteen hundred years.

8. I have shown that Jesus ordained, that the legislative authority, which created this

relation in that empire, should be obeyed and honored as an ordinance of God, as all governments are declared to be.

9. I have shown that Jesus has prescribed the mutual duties of this relation in this kingdom.

10. And lastly, I have shown, that in an attempt by his professed followers to disturb this relation in the Apostolic churches, Jesus orders that fellowship shall be disclaimed with all such disciples, as seditious persons—whose conduct was not only dangerous to the state, but destructive to the true character of the Gospel dispensation.

LATE BOOKS AND PERIODICALS.

1.—Europe, Past and Present.

A Comprehensive Manual of European Geography and History, with separate descriptions and statistics of each State, and a copious Index—by Francis H. Ungewitter, LL. D. New-York: Geo. P. Putnam. New-Orleans: J. B. Steel. 1850. The author of this admirable work has prepared several extensive geographical works which have been published in Germany. He has travelled extensively, and collected on the spot most of the information here embodied. Fifty-six European states are included, and the order of discussing them has been, firstly, area and population, surface, soil, natural products, manufactures, commerce and trade, public finances, form of government, strength of the army, and, with maritime states, of the navy; secondly, the history; and third, the topography of the state. We shall refer again to this volume, and meanwhile recommend it to our readers as a most invaluable work.

2.—White's Statistics of Georgia.

This volume we have elaborately reviewed in another place, and shall continue to notice.

3.—Grahamme, or Youth and Manhood.

By the author of "Talbot and Vernon." New-York: Baker & Scribner. We are indebted to Thomas L. White, 53 Canal street, for this interesting volume, which we have once before noticed. The author says, in his preface:

"To those who object to the character I have here drawn of Simon Bolivar, I have only to say, that this is the result of the best information I can get. I would be sorry to pull down, or to attempt to pull down, any hero rightfully enthroned; but every impostor, while he is believed, robs some true man of his due meed of praise."

Mr. White, we are gratified to state, has an assortment of valuable works on hand, of every kind, such as New-Orleans has seldom seen before.

4.—Historical Collections of Louisiana,

Embracing translations of many rare and valuable documents, relating to the natural, civil and political history of that State, compiled with historical and biographical notes, and an introduction by B. F. French, member of the Louisiana Historical Society, of the American Association for the advancement of Science, Honorary member of the Historical Society of Pennsylvania, &c. &c. Part 2d. Philadelphia: Daniels & Smith. New-Orleans: B. M. Norman. 1850.

We have given the full title of this praiseworthy contribution of our fellow citizen, Mr. French, to the Historical literature of our State. Eighteen months ago the first part was published, containing many interesting documents bearing upon the early history of the State; and the 3d part will be soon put to press, should there be sufficient encouragement offered to the present issue, and will contain La Harpe's celebrated journal, translated, an account of Louisiana about 1760, an account of the Natchez war, &c. &c.

Part 2d contains:

1. An account of the Louisiana Historical Society; being a description of its origin and history, its constitution, members, proceedings, correspondences, &c., with some account of the researches by John Perkins in Europe, and by Senor Gayangos in Spain.

2. Judge Ballard on the death of Judge Martin.

3. Forstall's Digest of all the French papers in relation to Louisiana. This alone is worth many times the price of the book.

4. An original Letter of Hernando de Soto.

5. A recently discovered Manuscript in relation to De Soto.

6. A gentleman of Elvas' account of De Soto's Expedition.

7. Daniel Coxe's account of the Mississippi and Carolina.

8. Marquette and Joliet's Voyage.

9. A very ancient and curious Map of Louisiana.

Each of these parts of Mr. French's collections are distinct and independent volumes, and we trust that the small edition which has been printed of the 2d, will be immediately exhausted by orders from every portion of the State. The price is very reasonable, and the book may be had of Norman.

5.—The New-Orleans Book.

This is an elegant volume, illustrated and gilded, and admirably suited for presentation in the holiday times. It contains extracts from the most distinguished writers of Louisiana, and a few copies yet remain at Steel's, Norman's, and at our office.

EDITOR'S NOTE.

We have received the following articles, but too late for insertion in the present number. They will have a prominent place in February:

1. *Diversity of the Human Race, by Dr. J. C. Nott, of Mobile.*—This elaborate paper, which reviews with a master-hand the late work by Dr. Bachman, of Charleston, upon the Unity of the Human Race, we regret cannot have a place in the present number. Few men in the country are so able to discuss this subject as Drs. Bachman, Morton, and Nott, and the world will be much indebted for their scientific labors. In regard to what we have previously published upon this subject from Dr. Nott, a distinguished gentleman of the West has lately written us:

"I am glad to see that you are bringing that important question, 'is the African and Caucasian of common origin?' before the public. Had it only been mooted ten years ago, and as well understood as I am persuaded it will be five years hence, much mischief and disadvantage to the South would have been avoided. Keep it up, I intreat you, and much good may be done."

2. *Butler's Review of the Spanish parties in the West.*—This is a reply by Dr. Monette, author of the History of the Valley of the Mississippi, to an attack made upon him last summer, through the pages of our Review, by Mann Butler, author of the History of Kentucky.

3. *Sketch of a Proposed Act of the Legislature of Louisiana*, in relation to guarding the Levees during the prevalence of high waters, by Alfred Stein, of Mobile.

4. *Supposititious Reviews*, by James W. Legare, Esq.—*(concluded.)*

5. *Bessemer's Patent Improvements in the Manufacture of Sugar, with engravings.*—This is an elaborate description of a patent, we will publish in our next, taken out last year in England, for a Cane Press of great power and efficiency, and of which we understand Messrs. Addison & Co., of this city, have been appointed agents. The following notice of it is taken in the London Standard:

INTERESTING TO SUGAR-PLANTERS.

"This morning a meeting took place at Baxter-House, Old St. Pancras-road, to witness an experiment, the result of Prince Albert's offer of a gold medal for the best improvement upon sugar-cane mills.

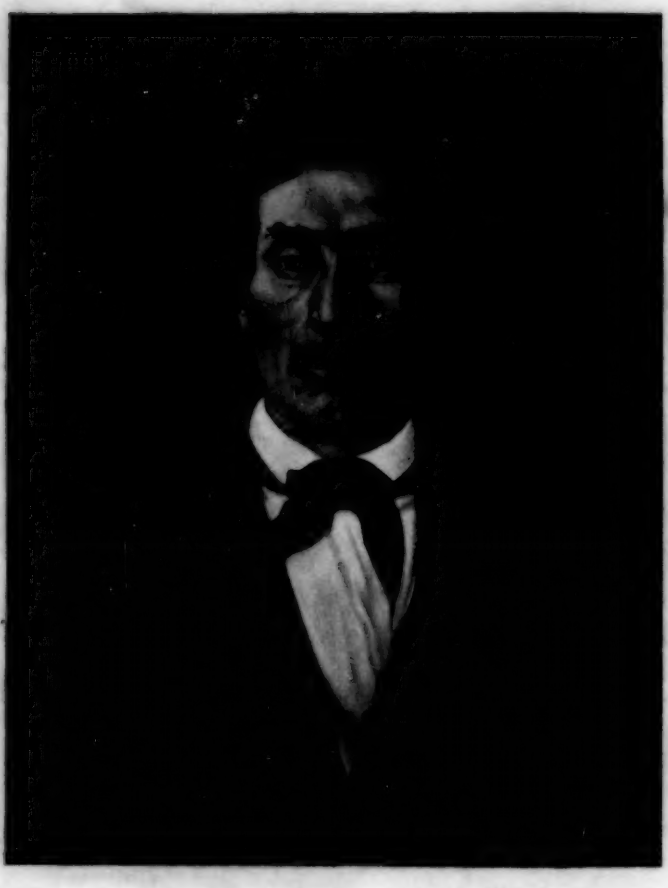
"The meeting consisted of a strong muster of planters from the West India Colonies, several distinguished scientific men, and a special deputation from the Society of Arts.

"It appears that the most improved mode hitherto used for expressing the juice from the sugar-cane is an arrangement of rollers worked by a steam-engine, through the former of which the sugar-canes pass, and the juice is abstracted, but from the porous nature of the cane fibre much of the juice is re-absorbed after the cane has passed through the rollers—the practical result being, that the most improved roller machines do not produce more than 55 per cent. of juice, whereas there is 90 per cent. in the cane, evidently leaving great room for improvement.

"The necessary preparations having been made, the engine was set to work and the first experiment made, which resulted in completely extracting the juice from 100 lbs. of sugar-cane in 63 seconds, which, by the way, was not an exhibition of the uttermost power of the engine, inasmuch as the fourth tube, being out of working order, could not be used; consequently, only three-fourths of the actual power was exhibited. The second experiment was to test the amount of juice the engine was capable of abstracting from a given amount of cane; this was also performed under somewhat disadvantageous circumstances, as the canes having been cut upwards of four months since, much of the juice had evaporated. Nevertheless, the lowest figures that could be placed upon the result were 65¼ per cent.—that is to say, 65¼ lbs. of juice was extracted from 100 lbs. of cane, leaving but little doubt but that, under more favorable circumstances, the new engine would realize 75 or 80 per cent., instead of the present average of 55, already mentioned—an improvement, when examined and entered into, of great magnitude and importance. Besides this, it was distinctly shown, that while the new mode of pressure abstracted so completely the juice of the interior of the cane, its knots and rind were left completely untouched—a most important advantage, as it is there that the green wax and other objectionable matters are contained; and it is there that the old roller machine unfortunately pressed—a difficulty insurmountable in the roller system, yet effectually obviated by the new process.

"The engine throughout was completely under control, and worked well; and the greatest interest and excitement was evinced in the experiment—one certainly of great importance both to the West India interest and to the public at large."

6. *Overflows of the Mississippi*—This is a proposal to obviate the dangers of crevasses by preventing the Arkansas and Red Rivers from overflowing the Mississippi at the time of the rise of that river. We hold it over to the next number.



Daniel S. Pratt

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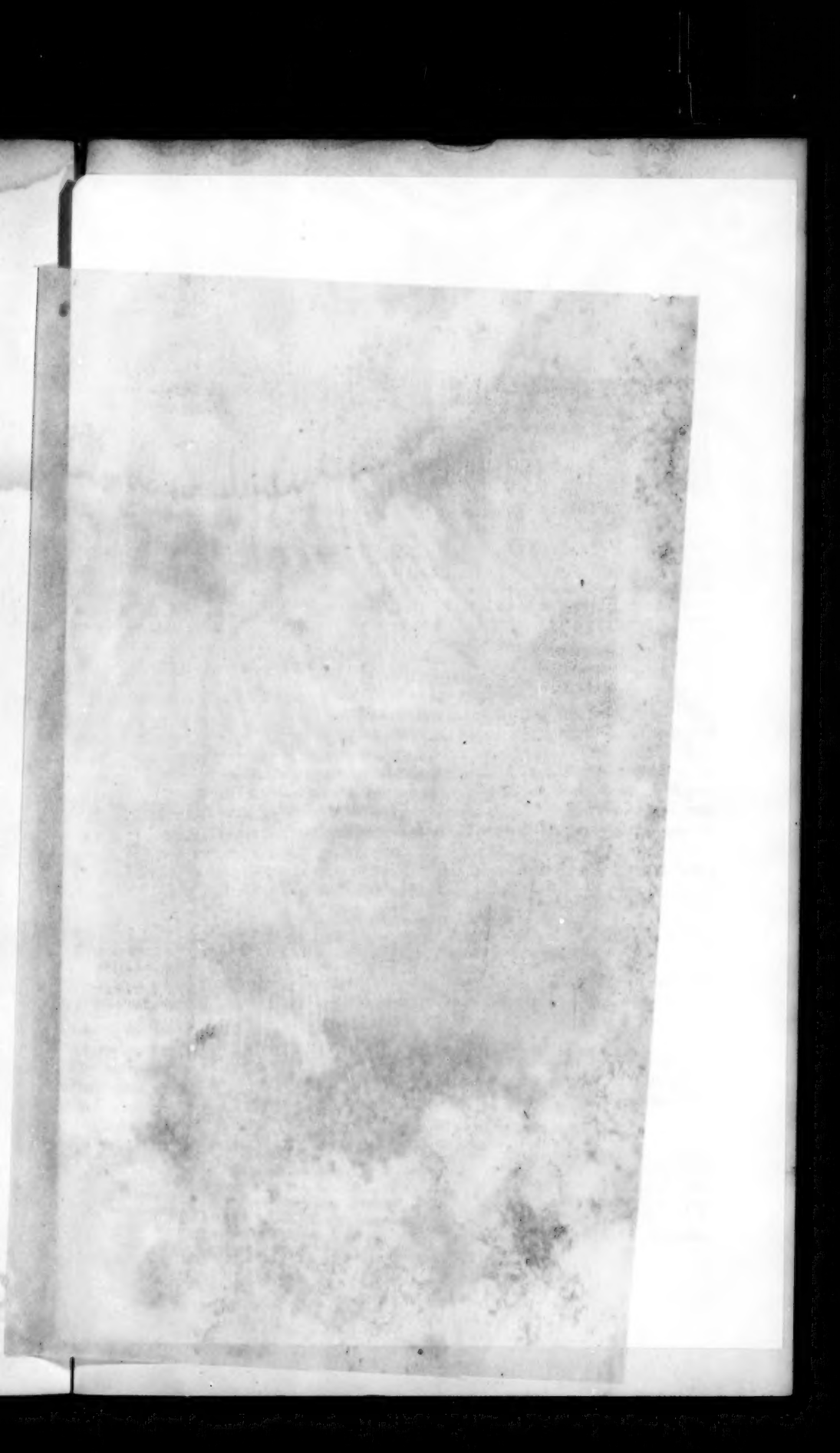
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